

MicroVAX 3100 and VAXserver 3100 Options Installation Guide

Order Number EK-424AA-TS-001

Digital Equipment Corporation

September, 1990

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About This Manual

This manual describes how to install options for the MicroVAX 3100 and VAXserver 3100 systems. The label on the rear of the system box indicates the system you are working on (MicroVAX or VAXserver).

Organization

The manual is divided into chapters according to the options available for the systems:

General Information, contains an overview of the systems and an option list.

Model 10 MicroVAX/VAXserver 3100, contains the disassembly and assembly procedures for the Model 10 MicroVAX 3100 or VAXserver 3100 System.

Model 20 MicroVAX/VAXserver 3100, contains the disassembly and assembly procedures for the Model 20 MicroVAX 3100 or VAXserver 3100 System.

Memory, contains installation procedures for the optional memory modules available for the MicroVAX/VAXserver 3100 systems.

Communications, contains installation procedures for the communications option, available for the MicroVAX/VAXserver 3100 systems.

It also provides instructions for the installation of the DSH32-Yx second synchronous line driver/receiver module and associated cabling.

Disks, contains SCSI Bus configuration rules, system configuration rules, and available add-on disk options for the MicroVAX 3100 and VAXserver 3100 system.

RX23 Disk Drive, provides instructions for installing an RX23 option into a Model 10 or Model 20 MicroVAX 3100 or VAXserver 3100 system.

RZ23 Disk Drive, provides instructions for installing an RZ23 option into a MicroVAX 3100 or VAXserver 3100 system.

RZ24 Disk Drive, provides instructions for installing an RZ24 option into a MicroVAX 3100 or VAXserver 3100 system.

RZ55 (in BA40 Disk Expansion Box), provides instructions for connecting the RZ55/BA40 Disk expansion to the MicroVAX 3100 or VAXserver 3100 system.

SZ12x (in BA42 Disk Expansion Box), refers to the installation, and upgrade of the SZ12x (BA42) storage expansion box. It includes details for setting up and using the storage expansion box for the first time, and information on adding a storage device to the storage expansion box.

TZ30 Tape Drive, describes the installation procedure for the TZ30 tape drive option for the MicroVAX 3100 and VAXserver 3100 systems.

TK50Z Tape Drive, provides instruction for installing the TK50Z expansion box in the MicroVAX 3100 and VAXserver 3100 systems.

CD ROM, contains installation procedures for the CDROM options available for the MicroVAX/VAXserver 3100 systems.

Appendix A, contains a table of diagnostic test commands and utility commands.

Appendix B, contains hexadecimal memory codes.

Appendix C, contains examples of the "SHOW DEVICE" command.

Intended Audience

This document is for Digital Customer Services personnel and self-maintenance customers only.

Tools and Equipment

You will need the following tools to service the MicroVAX 3100 and VAXserver 3100 systems:

- Wrist strap and antistatic mat (included in the Customer Service antistatic kit), part number 29-26246-00.
- Customer Service tool box kit, part number 29-27339-01.

Conventions

This document uses the following conventions:

- **Warning** Provides information to prevent personal injury. Read these carefully.
- **Caution** Provides information to prevent damage to the equipment or software. Read these carefully.
- **Note** Provides general information to be aware of.
- **Important** Provides information that must be observed.

Related Documents

The following document list is a guide to order documents from Digital. These documents will provide more detailed general and technical information for the MicroVAX/VAXserver 3100 systems and options.

Document	Order Number
MicroVAX 3100 and VAXserver 3100 Owners Manual	EK-A0371-OM
MicroVAX 3100 and VAXserver 3100 Maintenance Guide	EK-A0372-MG
MicroVAX 3100 and VAXserver 3100 Planning and Preparation	EK-A0373-PC
MicroVAX 3100 and VAXserver 3100 Illustrated Parts Breakdown	EK-A0372-IP
MicroVAX 3100 and VAXserver 3100 Maintenance Advisory	EK-M3100-MA
Storage Expansion Box	EK-SEBOX-IN
RZ56 Disk Drive Subsystem Manual	EK-RZ56D-SV
RZ Disk Drive Subsystem Pocket Service Guide	EK-RZXXD-PS
	EK-RZ57D-SV
RZ22, RZ23, RZ24 Service Manual	EK-RZ234-SV

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Order Processing Section

General Information

Product Overview

The MicroVAX 3100 series include the MicroVAX 3100 and the VAXserver 3100 systems. The MicroVAX 3100 system is a desktop VAX computer which supports a maximum of eleven users. The VAXserver 3100 system is a desktop server designed to provide operating system services for dedicated applications or devices.

The MicroVAX/VAXserver 3100 series is available in a Model 10 and a Model 20 version.

The Model 20 provides a larger storage capacity with a six-inch-high enclosure and including upper and lower drive mounting plates.

The Model 10 provides a four-inch-high enclosure, with only the lower drive mounting plate.

Both systems can be used either independently or in a work group with other VAX systems.

Options List

The following table lists the options that may be used with the MicroVAX/VAXserver 3100 series:

Options list:

Option	Size
MS42-AB	4 megabyte expansion memory
MS42-KA	8 megabyte expansion memory
MS42-BA	12 megabyte expansion memory
MS42-CA	16 megabyte expansion memory
DSH32-B	8 Asynchronous/1 Synchronous Communications module
RRD40	5 1/4" Half-height CD-ROM 600 MB
RX23	3 1/2" Half-height Floppy Disk 1.4 MB
RZ23	3 1/2" Half-height Disk 104 MB
RZ24	3 1/2" Half-height Disk 209 MB
RZ55	5 1/4" Full-height Disk 332 MB
RZ56	5 1/4" Full-height Disk 665 MB
RZ57	5 1/4" Full-height Disk 1.2 GB
TK50	5 1/4" Full-height Tape 95 MB
TZ30	5 1/4" Half-height Tape 95 MB

Model 10 MicroVAX/VAXserver 3100

Disassembling the Model 10 MicroVAX 3100 or VAXserver 3100 System

To enable option(s) installation, disassemble the Model 10 MicroVAX 3100 or VAXserver 3100 system.

CAUTION

Wear an anti-electrostatic wrist strap and use an anti-electrostatic mat when installing or replacing field replaceable units (FRUs).

To disassemble the Model 10 MicroVAX 3100 or VAXserver 3100 system do the following:

1. Bring down the Operating System Software and halt the system.
2. Turn off the power to the system box and any expansion boxes.
3. Disconnect all cables and loopbacks connected to the system unit.
Place any expansion boxes off to the side, away from the system unit.
4. Loosen the two captive screws on the rear bezel of the system box
(Refer to Figure M10-1).

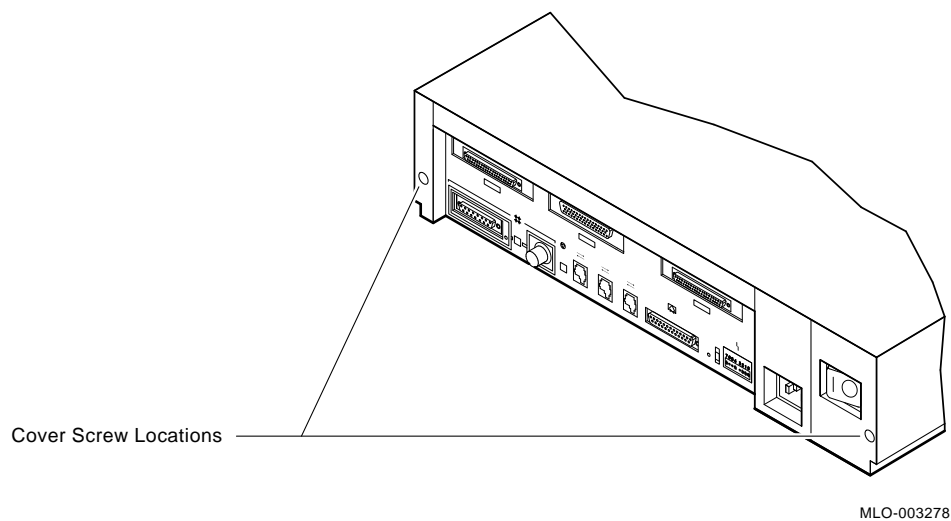
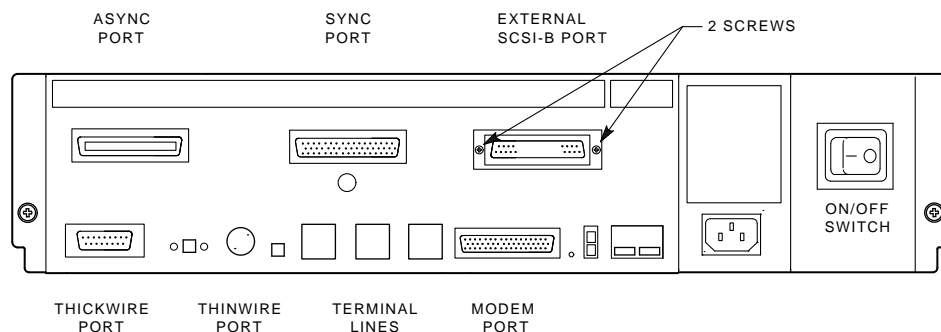


Figure M10-1 Captive Screw Locations (Model 10)

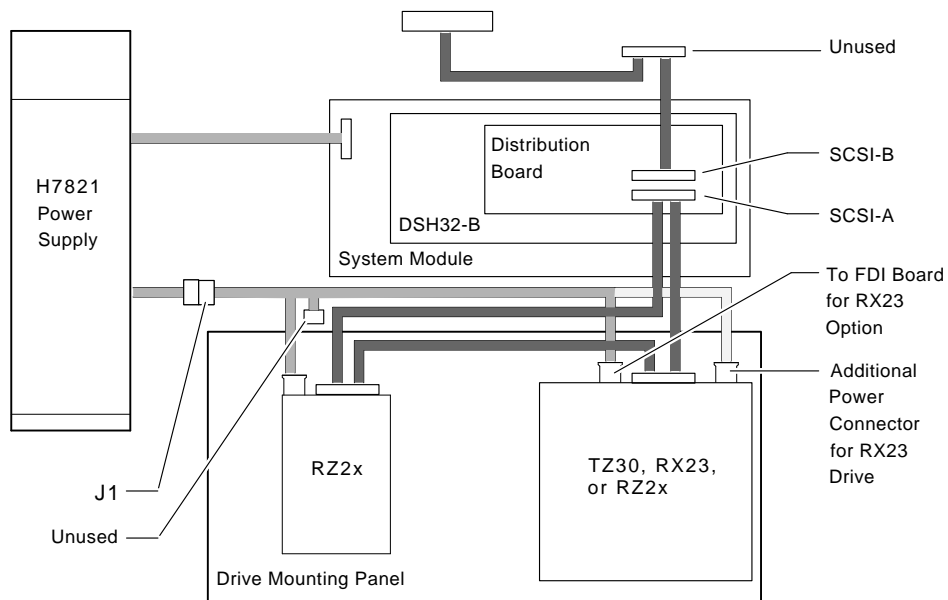
5. Slide the top cover forward and up, away from the system box.
6. Remove the SCSI "B" external port connector from the rear panel by removing the two mounting screws on the rear of the system unit (Refer to Figure M10-2).



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Figure M10-2 Removing the SCSI "B" External Port Connector

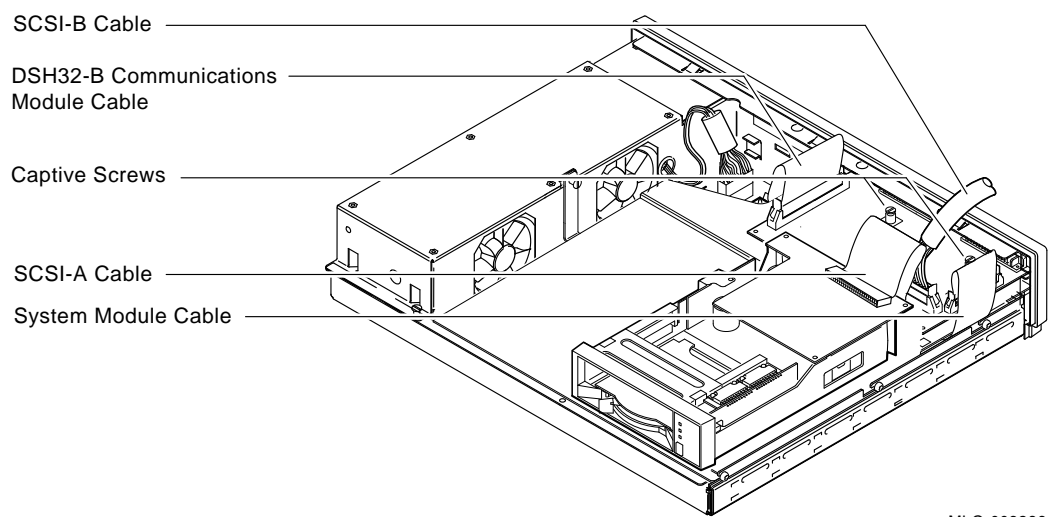
7. Disconnect the DC power harness plug from J1 on the H7821 power supply (Refer to Figure M10-3).



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Figure M10-3 DC Power Connector (Model 10)

8. Disconnect the system module cable from the distribution module (Refer to Figure M10-4).



MLO-003286

Figure M10–4 Distribuiton Module Cables

9. Disconnect the DSH32 module cable (if applicable) from the distribution module (Refer to Figure M10–4).
10. Loosen the four captive screws on the top, and the 3 panhead screws located on the right side of the drive mounting shelf (Refer to Figure M10–5).

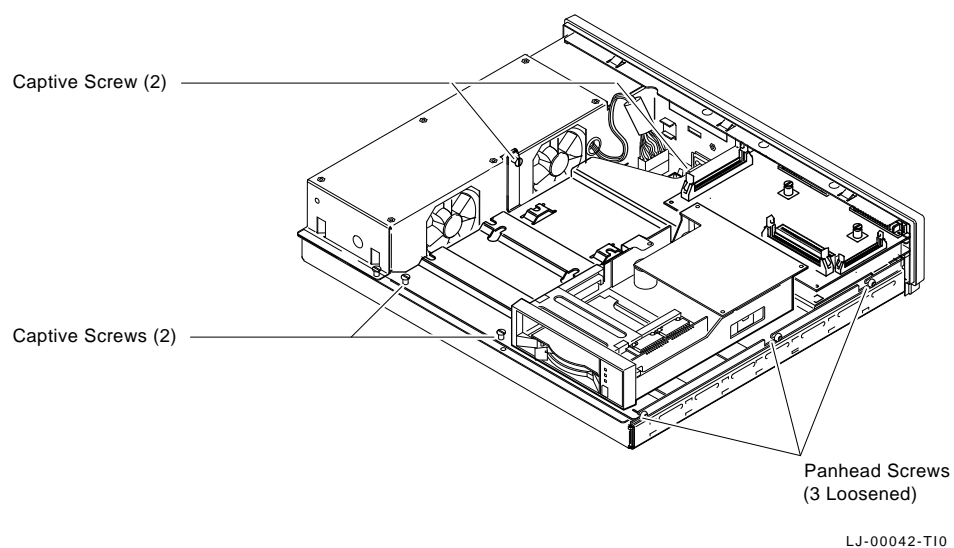


Figure M10-5 Drive Mounting Panel (Model 10)

11. Slide the drive mounting shelf forward, then lift the shelf from the system unit, and gently set it aside.

NOTE

At this point, the system unit is disassembled enough to allow you to install any and all of the various options.

For specific option installation procedures refer to the appropriate section.

Assembling the Model 10 MicroVAX 3100 or VAXserver 3100 System

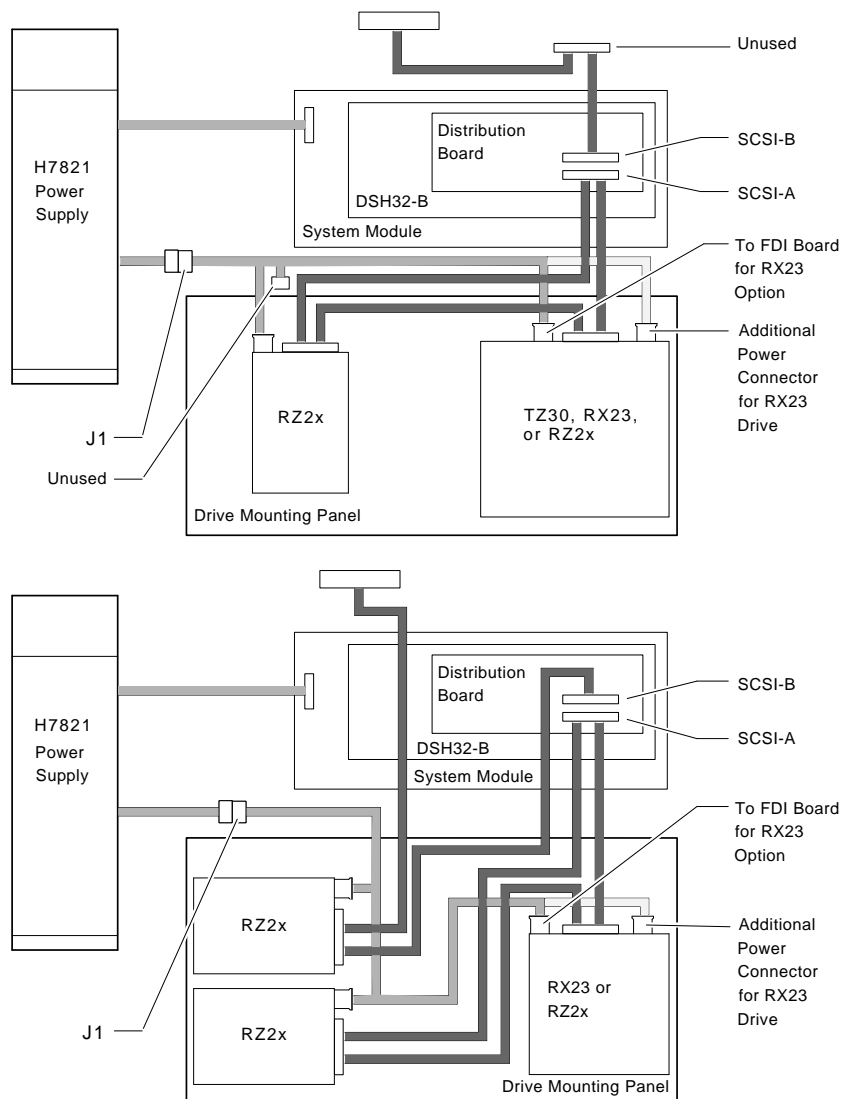
This section describes how to re-assemble the Model 10 system after the option installation has been completed.

CAUTION

Wear an anti-electrostatic wrist strap and use an anti-electrostatic mat when installing or replacing field replaceable units (FRUs).

To assemble the Model 10 MicroVAX 3100 or VAXserver 3100 system do the following:

1. Set the drive mounting shelf in place and tighten the 4 captive screws and 3 panhead screws (Refer to Figure M10-5).
2. Connect the DSH32 module cable (if applicable) to the distribution module (Refer to Figure M10-4).
3. Connect the system module cable to the distribution module (Refer to Figure M10-4).
4. Connect the DC power harness plug J1 to the H7821 power supply (Refer to Figure M10-3).
5. Install the SCSI "B" external port connector to the rear panel by installing the two mounting screws on the rear of the system unit (Refer to Figure M10-2).
6. Ensure the appropriate data and power cables are connected to each storage device (Refer to Figure M10-6).



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Figure M10-6 Storage Device Positioning and Cabling

M10-8 Model 10

7. Place the top cover on the system box and secure it in place and tighten the two captive screws on the rear bezel (Refer to Figure M10–1).
8. Connect all cables, loopback connectors, and expansion boxes which were previously disconnected from the system unit.
9. Power up the expansion box(es) before powering up the system box (if applicable).
10. Power up the system box and ensure a successful completion of the self-test.
11. Refer to the section on the newly installed option for console test commands.
12. Bring up the operating system software to verify the system functionality.

Model 20 MicroVAX/VAXserver 3100

Disassembling Model 20 MicroVAX 3100 or VAXserver 3100 System

This section describes how to disassemble the Model 20, MicroVAX 3100 or VAXserver 3100 system in order to enable option(s) installation.

CAUTION

Wear an anti-electrostatic wrist strap and use an anti-electrostatic mat when installing or replacing field replaceable units (FRUs).

1. Bring down the Operating System Software and halt the system.
2. Turn off the power to the system box and any expansion boxes.
3. Disconnect all cables and loopbacks connected to the system unit and place any expansion boxes off to the side and away from the system unit.
4. Loosen the two captive screws on the rear bezel of the system box (Refer to Figure M20-1).

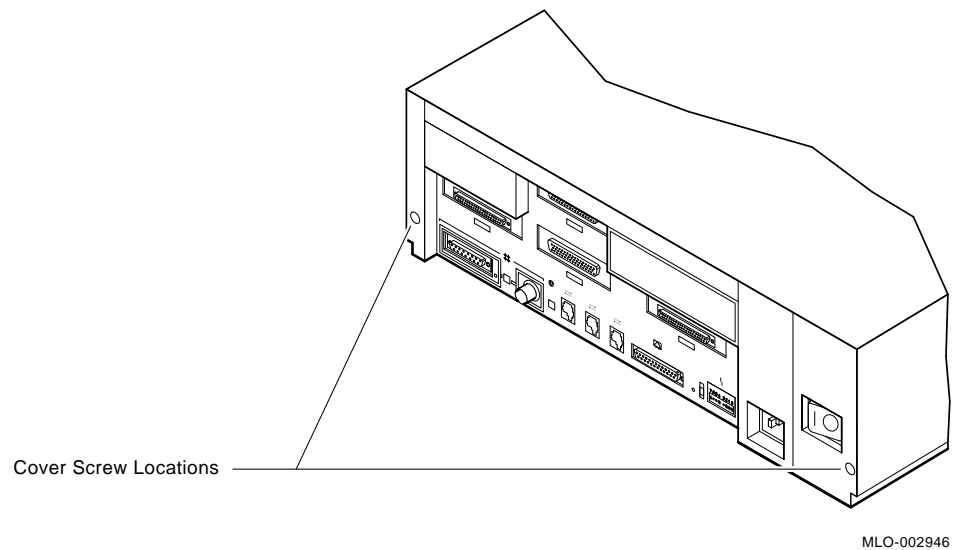
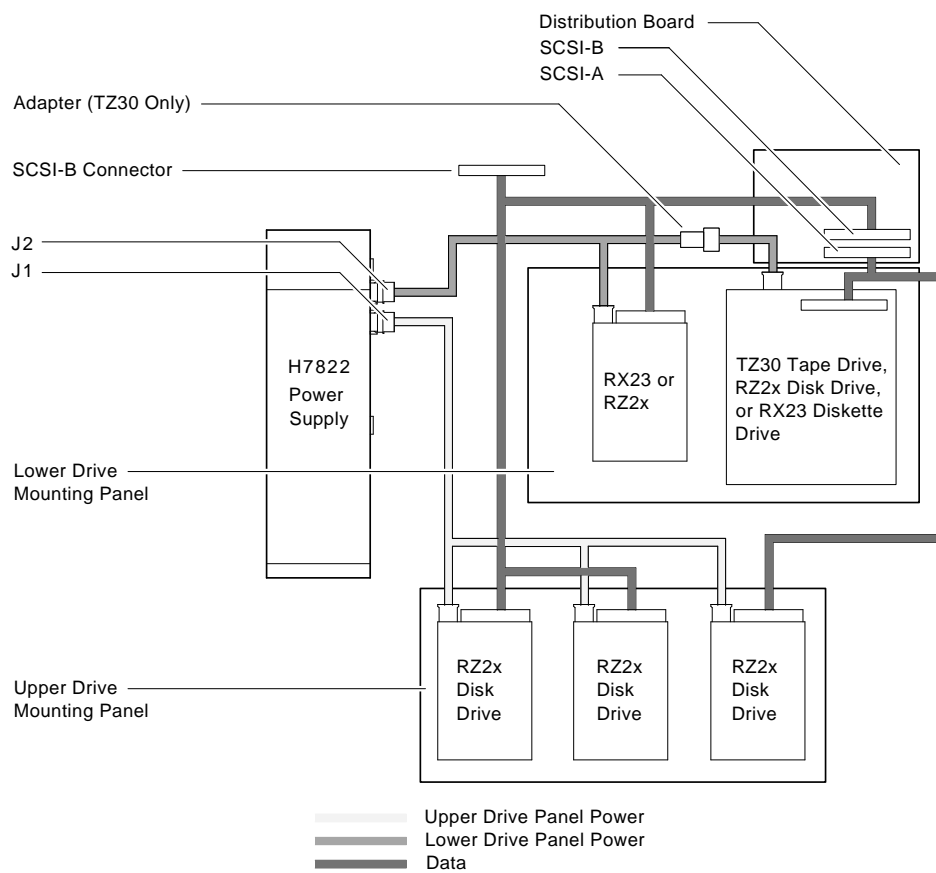


Figure M20-1 Captive Screw Location (Model 20)

5. Slide the top cover forward and up off the system box.
6. Disconnect the SCSI bus cables from the drives on the upper drive mounting shelf (Refer to Figure M20-2).



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Figure M20-2 Drive Mounting Panel Power and Signal Cabling

IMPORTANT

You must note which cables connect to which drives when you disconnect them.

Write the type of drive and its position on a piece of tape and wrap the tape around the connector before you disconnect it. This will help you when you reinstall the drives.

7. Disconnect the power harness plugs from connectors J1 and J2 of the H7822 power supply (Refer to Figure M20-2).
8. Unscrew the four captive screws on the upper drive mounting shelf (Refer to Figure M20-3).

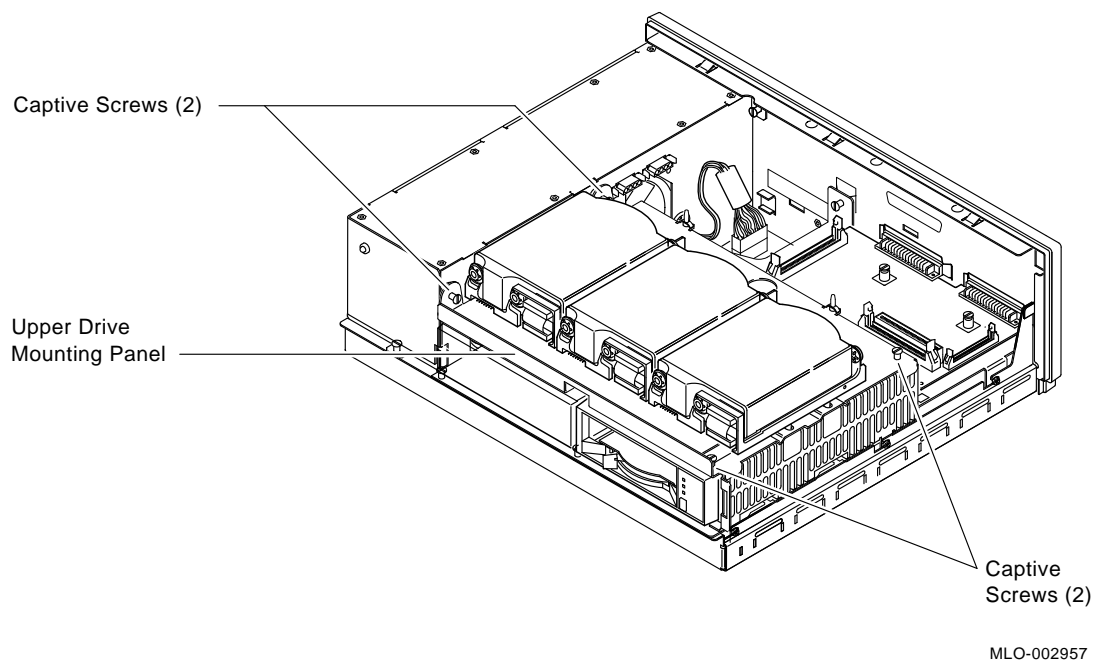


Figure M20-3 Upper Drive Mounting Panel (Model 20)

9. Lift the upper drive mounting shelf from the system unit and gently set it aside.

IMPORTANT

Stop here if you install additional half-height hard disk on the upper drive shelf.

10. Remove the SCSI "B" external port connector from the rear panel by removing the two mounting screws on the rear of the system unit (Refer to Figure M20-4).

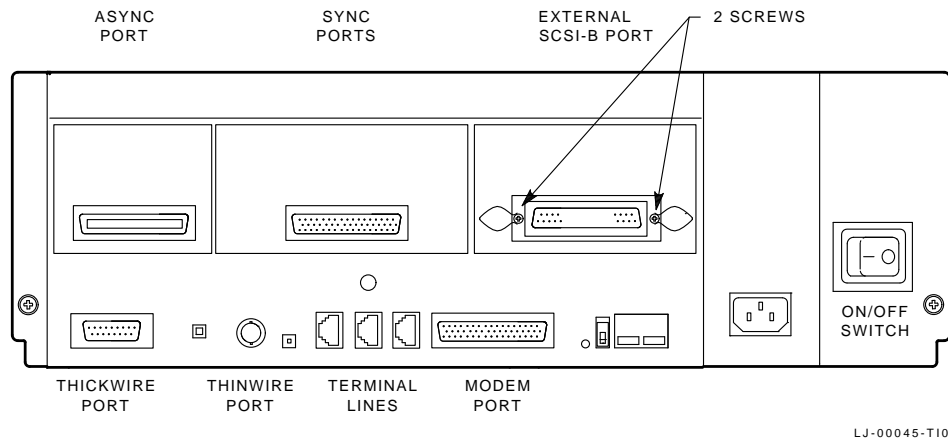


Figure M20-4 Removing the SCSI "B" External Port Connector

11. Disconnect the system module cable from the distribution module (Refer to Figure M20-5).

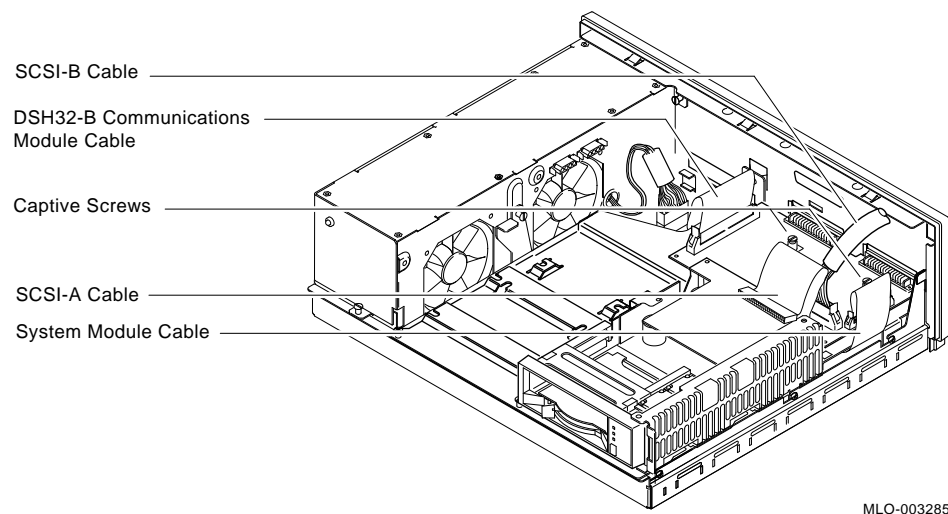


Figure M20-5 Distribution Module Cables

12. Disconnect the DSH32 module cable (if applicable) from the distribution module (Refer to Figure M20-5).
13. On the lower drive mounting shelf, loosen the four captive screws on the top, and the 3 panhead screws located on the right-hand side (Refer to Figure M20-6).

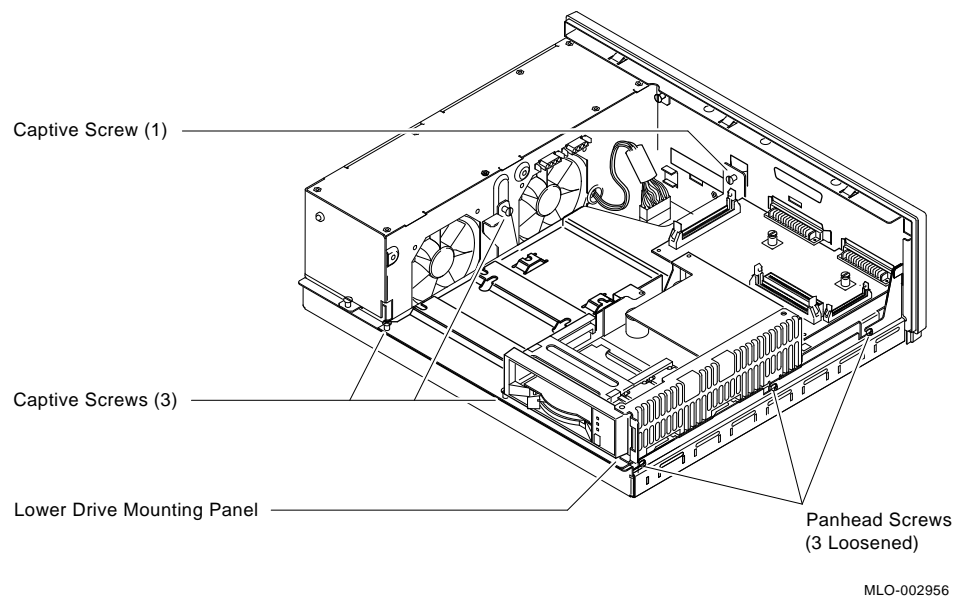


Figure M20-6 Lower Drive Mounting Shelf

14. Slide the lower drive mounting shelf forward, then lift the shelf from the system unit and gently set it aside.

NOTE

At this point, the system unit is disassembled enough to allow you to install any and all of the various options.

For specific option installation procedures refer to the appropriate section.

Assembling the Model 20 MicroVAX 3100 or VAXserver 3100 System

This section describes how to re-assemble the Model 20 system after the option installation has been completed.

CAUTION

Wear an anti-electrostatic wrist strap and use an anti-electrostatic mat when installing or replacing field replaceable units (FRUs).

1. Set the lower drive mounting shelf in place and tighten the four captive screws and the 3 panhead screws located on the right-hand side (Refer to Figure M20-6).
2. Connect the DSH32 module cable (if applicable) to the distribution module (Refer to Figure M20-5).
3. Connect the system module cable to the distribution module (Refer to Figure M20-5).
4. Install the SCSI "B" external port connector to the rear panel by installing the two mounting screws on the rear of the system unit (Refer to Figure M20-4).
5. Ensure the SCSI data cables and power cables are connected to each storage device (Refer to Figure M20-2).
6. Place the upper drive mounting shelf in place and tighten the four captive screws (Refer to Figure M20-3).
7. Connect the DC power harness plugs to connectors J1 and J2 of the H7822 power supply (Refer to Figure M20-2).
8. Connect the SCSI bus cables to the drives on the upper drive mounting shelf (Refer to Figure M20-2).
9. Place the top cover on the system box and secure it in place by tightening the two captive screws (Refer to Figure M20-1).
10. Connect all cables, loopback connectors, and expansion boxes which were previously disconnected from the system unit.
11. Power up the expansion box(es) before powering up the system box (if applicable).

12. Power up the system box and ensure a successful completion of the self-test.
13. Refer to the section on the newly installed option for console commands.
14. Bring up the operating system software to verify the system functionality.

Memory

MicroVAX 3100 or VAXserver 3100 Memory Configuration

The MicroVAX 3100/VAXserver 3100 memory can be configured to equal totals of 8, 12, 16, 20, 24 and 32 megabyte configurations. This is accomplished by the addition of either one or two memory expansion modules to the system module. Note, the system module contains 4 megabyte of resident memory. Refer to the information below for memory expansion guidelines.

Rules:

- A maximum of two memory modules can be added per system, however, each variant may be selected only once.
- The MS42-KA (8 MB) & MS42-CA (16 MB) may not be configured together.
- The MS42-AB (4 MB) & MS42-BA (12 MB) may not be configured together.

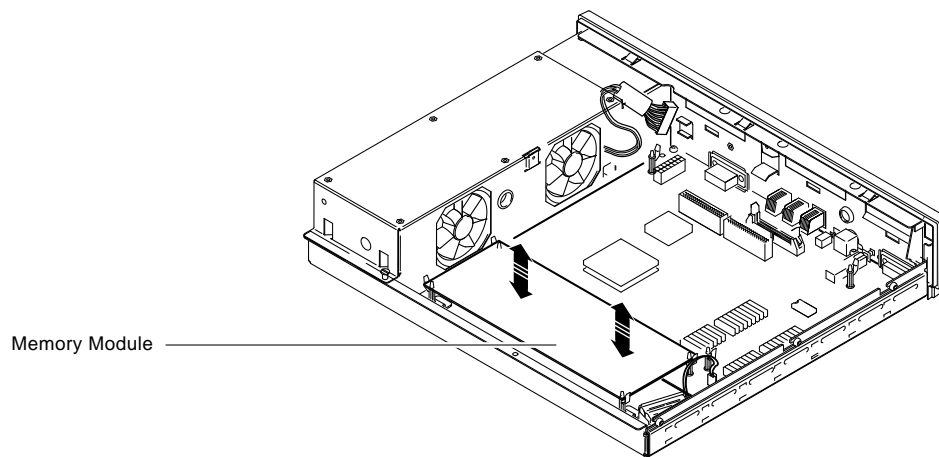
Memory Module Installation

This section describes:

- **single** memory module installation **without** an expansion memory currently installed
- **single** memory module installation **with** an expansion memory currently installed
- **dual** memory module installation

Single Memory Module Installation Without Expansion Memory Installed

1. Refer to either the Model 10 or Model 20 chapter for the system disassembly procedure.
2. Align the expansion memory module connector with the system module expansion memory connector (Refer to Figure MEM-1).
3. Press down on the expansion memory until this module is fully seated.
4. Press down on the outer edge of the expansion memory to secure it onto the standoff tabs.



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Figure MEM-1 Memory Module Removal

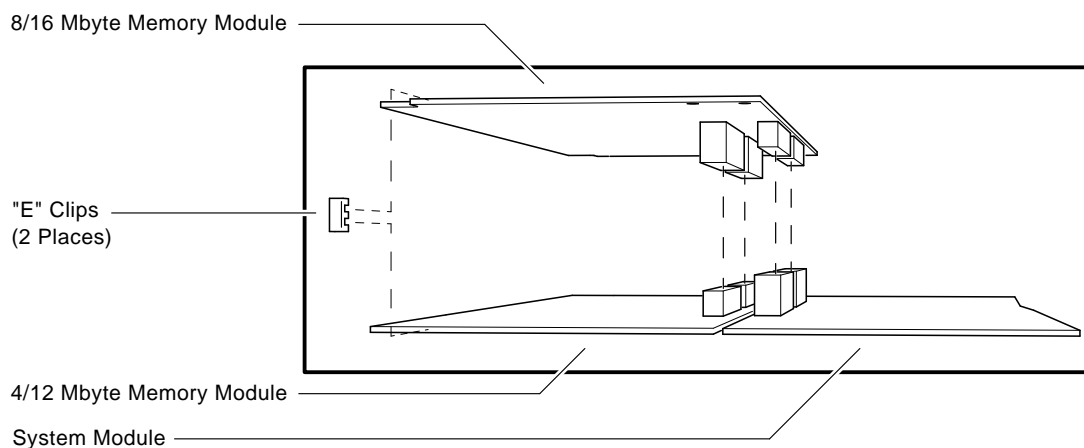
5. Refer to either the Model 10 or Model 20 chapter for the system reassembly procedure.

MEM-2 Memory

6. After power up and a successful completion of the self-tests, verify the new memory configuration by entering the SHOW MEMORY command at the console prompt (>>>).
7. For memory configuration equivalent values refer to Appendix B.

Single Memory Module Installation With Expansion Memory Installed

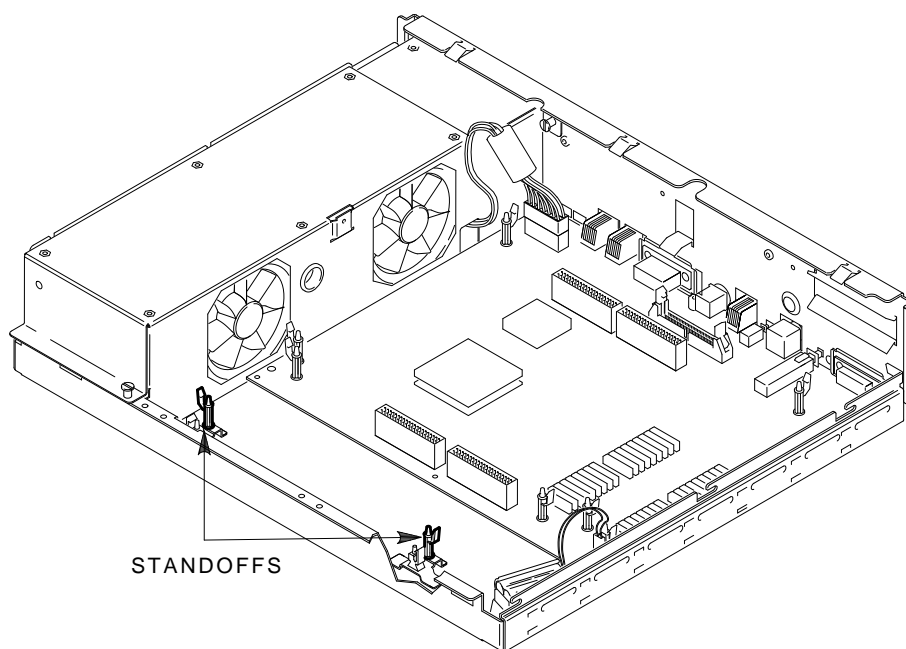
1. Refer to either the Model 10 or Model 20 chapter for the system disassembly procedure.
2. Release the memory module from the standoffs and separate this module from the system module.
3. Align the memory module just removed with the new memory module.



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Figure MEM-2 Memory Module Connections

4. Press modules together until both modules are fully seated (Refer to Figure MEM-2).
5. Install the "E" clips onto the expansion memories (Refer to Figure MEM-2).
6. Remove the two taller standoffs which supported the expansion memory by bending them over until they snap off. Discard the standoffs (Refer to Figure MEM-3).



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Figure MEM-3 Removing the standoffs

MEM-4 Memory

NOTE

Removing the two standoffs allows space for the 4 or 12 Mbyte memory module when these modules are attached to the 8 or 16 Mbyte memory module. The 4 or 12 Mbyte memory module uses the two shorter standoffs for support.

7. Align the expansion memory module connector with the system module expansion memory connector and press down on the expansion memory until it is fully seated.
8. Refer to either the Model 10 or Model 20 chapter for the system reassembly procedure.
9. After power up and a successful completion of the self-tests, verify the new memory configuration by entering the SHOW MEMORY command at the console prompt (>>>).
10. For memory configuration equivalent values refer to Appendix B.

Dual Memory Module Installation

1. Refer to either the Model 10 or Model 20 chapter for the system disassembly procedure.
2. Align the expansion memory connectors and press modules together until both modules are fully seated (Refer to Figure MEM-2).
3. Install the "E" clips onto the expansion memories (Refer to Figure MEM-2).
4. Remove the two taller standoffs which supported the expansion memory by bending them over until they snap off. Discard the standoffs. (Refer to Figure MEM-3).

NOTE

Removing the two standoffs allows space for the 4 or 12 Mbyte memory module when these modules are attached to the 8 or 16 Mbyte memory module. The 4 or 12 Mbyte memory module uses the two shorter standoffs for support.

5. Align the expansion memory module connector with the system module expansion memory connector and press down on the expansion memory until it is fully seated (Refer to Figure MEM-2).

6. Refer to either the Model 10 or Model 20 chapter for the system reassembly procedure.
7. After power up and a successful completion of the self-tests, verify the new memory configuration by entering the SHOW MEMORY command at the console prompt (>>>).
8. For memory configuration equivalent values see Appendix B.

Communications

This chapter contains installation procedures for the communications option, available for the MicroVAX 3100 and VAXserver 3100 system.

This chapter also provides instructions for the installation of the DSH32-Yx second synchronous line driver/receiver module and associated cabling.

Installation Procedure for the Communications Option

1. Refer to either the Model 10 or Model 20 chapter for the system disassembly procedure.
2. Connect the DSH32 communications cable (part number 17-02294-01) to the DSH32 Communications module (Refer to Figure COM-1).
3. Align the interface connector on the DSH32 module with the communications interface connector on the system module (Refer to Figure COM-1).

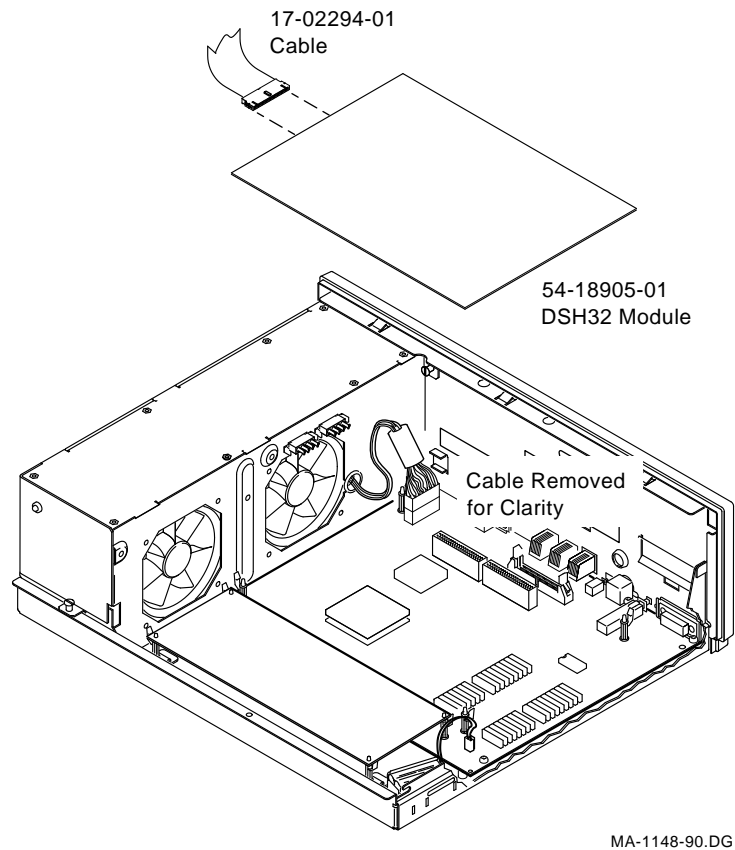


Figure COM-1 DSH32 Module

4. Press down on the DSH32 module until it is fully seated
5. Press down on the outer edge of the DSH32 module to secure it onto the standoff tabs.
6. Refer to either the Model 10 or Model 20 chapter for the system reassembly procedure.
7. After power up and successful completion of the self-tests, verify the DSH32 installation by entering the "T 50" command at the console prompt (>>>).

For errors note the DSH32-A and DSH32-S lines (Refer to Figure COM-2).

```

>>> TEST 50
KA41-A V1.4
ID 08-002B-03-79-1F

CLK      0000.0001
NVR      0000.0001
DZ       0000.4001
00004001 00000001 00000001 00000000 00000000
MEM      0004.0001
00400000
MM       0000.0001
FP       0000.0001
IT       0000.0001
SCSI-A   7711.0001 V1.0
        FFFFFFF05 FFFFFFF05 FFFFFFF05 00000001 FFFFFFF03 FFFFFFF05
SCSI-B   1C1C.0001 V1.0
        FFFFFFF05 FFFFFFF05 . . . 00000001 . . . FFFFFFF03 FFFFFFF05
SYS      0000.0000
DSH32-A  00FF.0000 V2.0
DSH32-S  0000.0001 V2.0
NI       0000.0001

>>>

```

Figure COM-2 Configuration Table (T 50)

DSH32-Yx

This section provides instructions for the installation of the DSH32-Yx second synchronous line driver/receiver module and associated cabling.

This procedure may be used in addition with the DSH32-Bx installation for simultaneous installation of the DSH32-Bx control module and the second synchronous line module or separately as a second synchronous line upgrade.

CAUTION

Wear an anti-electrostatic wrist strap and use an anti-electrostatic mat when installing or replacing field replaceable units (FRUs).

Kit Contents

A parts list breakdown of the appropriate line interface kit is provided in the following table:

Table COM–1 DSH32 Second Synchronous Line Upgrade Kits

	DSH32 -	YA	YB	YC
12-27591-01	Adaptor, Conn., Male to Female	1	-	-
17-01871-01	Cable Assembly, 16 Cond.	-	-	1
17-01872-01	Cable Assembly, 16 Cond.	1	-	-
17-01873-01	Cable Assembly, 16 Cond.	-	1	-
17-02298-01	Cable Assembly, Flat	1	1	1
54-17230-01	Module, Driver/Receiver, Sync.	1	1	1
90-09984-07	Screw, Hex., 6/32	2	2	2

NOTE

- **The "YA" kit is the RS232 version. (BC19V-02 = 17-01872-01)**
- **The "YB" kit is the RS423 version. (BC19W-02 = 17-01873-01)**
- **The "YC" kit is the RS422 version. (BC19U-02 = 17-01871-01)**

The DSH32-Yx kit may also contain a bracket along with two fasteners. These parts are not currently used in the MicroVAX/VAXserver 3100 systems.

Second Synchronous Line Upgrade Installation Procedure

1. Bring down the operating system software.
2. Before removing power to the system, enter the T 50 command at the console prompt (>>>) and note the revision indicated on the line for DSH32-S (Refer to Figure COM–3).

NOTE

Version 2.0 is the minimum revision required, to support the second synchronous line of the DSH32-S subsystem.

```

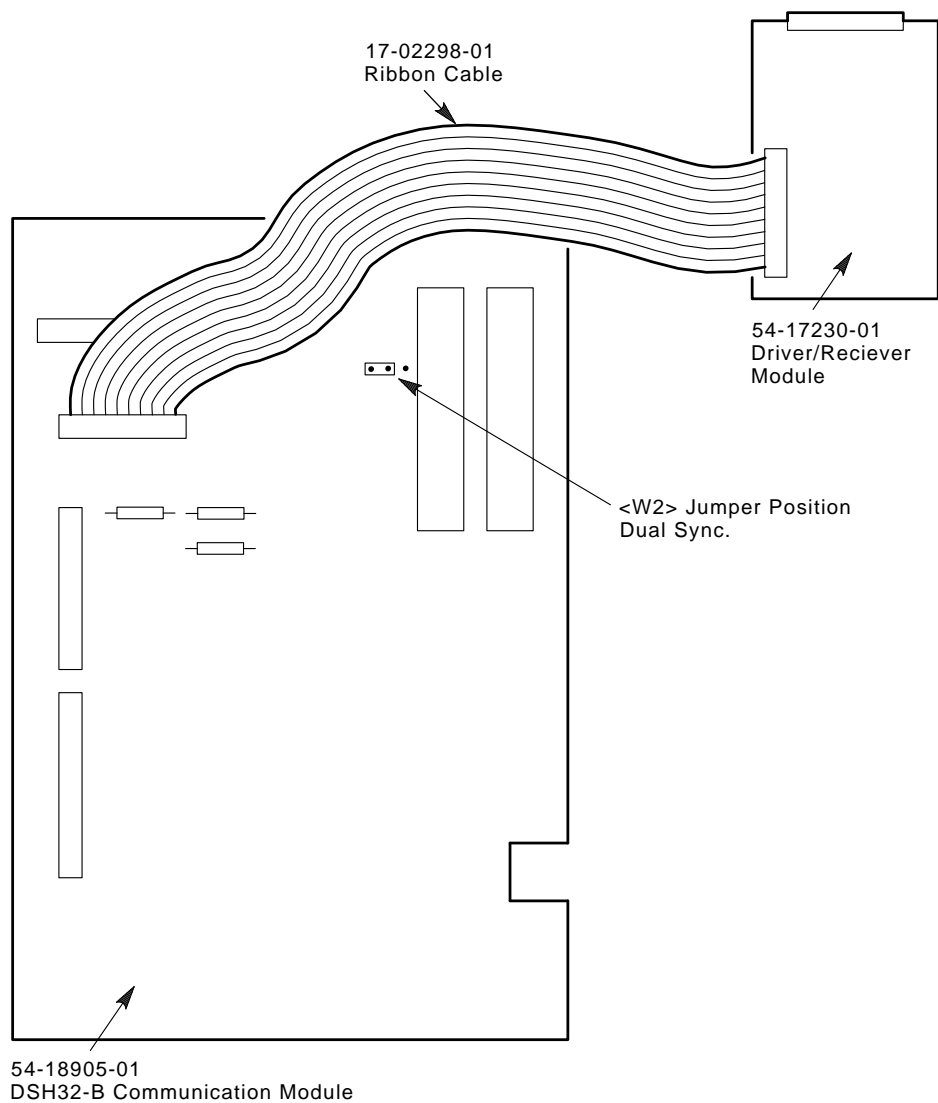
>>> TEST 50
KA41-A V1.4
ID 08-00-2B-03-79-1F

CLK      0000.0001
NVR      0000.0001
DZ       0000.4001
          000000001 00000001 00004001 00000000 00000000
MEM      0004.0001
          00400000
MM       0000.0001
FP       0000.0001
IT       0000.0001
SCSI-A   0000.4001 V1.58
          FFFFFFF05 FFFFFFF05 FFFFFFF05 00000001 FFFFFFF05 FFFFFFF03 FFFFFFF05
SCSI-B   0000.4001 V1.58
          FFFFFFF05 FFFFFFF05 FFFFFFF05 00000001 FFFFFFF05 FFFFFFF03 FFFFFFF05
SYS      0000.0000
DSH32-A  00FF.0000 V1.0
DSH32-S  0000.0001 V2.0
NI       0000.0001
>>>

```

Figure COM-3 T 50 (DSH32-S Revision)

3. Refer to the Model 20 system disassembly procedure and remove the upper and lower storage shelves from the system box.
4. Remove the DSH32 communications module (54-18905-01) by disconnecting the ribbon cable from the distribution module. Release the module from the four standoffs while separating it from the system module connector (Refer to Figure COM-1).
5. Relocate jumper "W2" on the DSH32 communications module from single synchronous line selection to dual synchronous line selection (Refer to Figure COM-4).

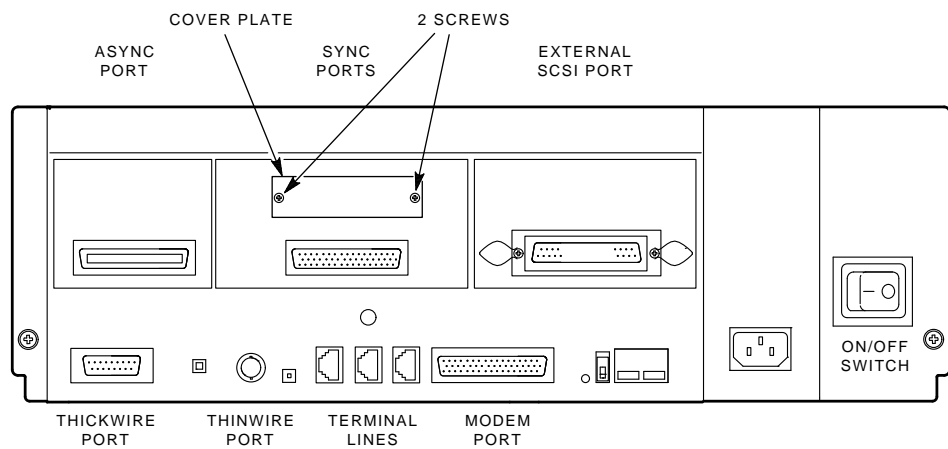


MA-1150-90.DG

Figure COM-4 DSH32 Subsystem FRU's

COM-6 Communications

6. Connect the second synchronous line cable (17-02298-01) to connector J3 of the DSH32 communications controller module (Refer to Figure COM-4).
7. Install the communications controller module by aligning the interface connectors on the DSH32 module with the communications interface connectors and four standoffs on the system module. Press down firmly on the connectors and four corners until the DSH32 module is seated in place (Refer to Figure COM-1).
8. Connect the original synchronous line ribbon cable back to the distribution module.
9. Remove the second synchronous port cover plate from the rear bezel by loosening the two panhead screws (Refer to Figure COM-5).



MA-1149-90.DG

Figure COM-5 Second Sync Port

10. Mount the second synchronous line driver/receiver module 54-17230-01 to the rear bezel, using the two male to female hex adapter screws from the DSH32-Yx kit (Refer to Figure COM-6).

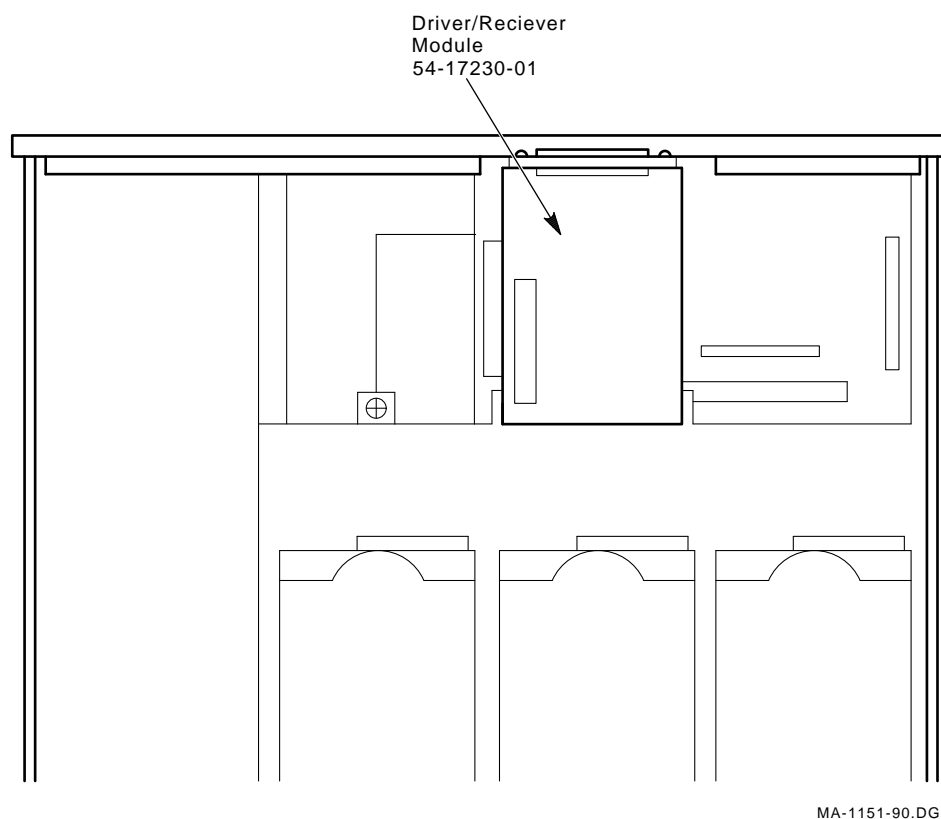


Figure COM-6 Second Sync Driver/Receiver Module

11. Connect the newly installed second synchronous line cable 17-02298-01 to the driver/receiver module (Refer to Figure COM-4).
12. Refer to the chapter for Model 20 reassembly procedure and reassemble the system.
13. After power up and a successful completion of the self-tests, verify the DSH32-Yx second synchronous line installation by entering the "T 50" command at the console prompt (>>>) and noting the DSH32-S lines for any errors (Refer to Figure COM-7).

```
>>> TEST 50
KA41-A V1.4
ID 08-00-2B-03-79-1F

CLK      0000.0001
NVR      0000.0001
DZ       0000.4001
          000000001 00000001 00004001 00000000 00000000
MEM      0004.0001
          00400000
MM       0000.0001
FP       0000.0001
IT       0000.0001
SCSI-A   0000.4001 V1.58
          FFFFFFF05 FFFFFFF05 FFFFFFF05 00000001 FFFFFFF05 FFFFFFF03 FFFFFFF05
SCSI-B   0000.4001 V1.58
          FFFFFFF05 FFFFFFF05 FFFFFFF05 00000001 FFFFFFF05 FFFFFFF03 FFFFFFF05
SYS      0000.0000
DSH32-A  00FF.0000 V1.0
DSH32-S  0000.0001 V2.0
NI       0000.0001

>>>
```

Figure COM-7 T 50 (DSH32-S Revision)

Disks

Disks

The MicroVAX 3100 and VAXserver 3100 systems utilize the Industry-Standard Small Computer Systems Interface (SCSI) for connection of both the internal and external disk storage devices. There are two separate SCSI busses utilized within the MicroVAX 3100/VAXserver 3100 which are depicted by the SCSI-A bus and the SCSI-B bus. The SCSI-A bus provides two internal-only ports, while the SCSI-B bus provides one internal port for the Model 10 system and three internal ports for the Model 20 system. In addition, the SCSI-B bus provides a connection for external expansion via the SCSI-B port connector on the rear of the system unit.

SCSI Bus Configuration Rules

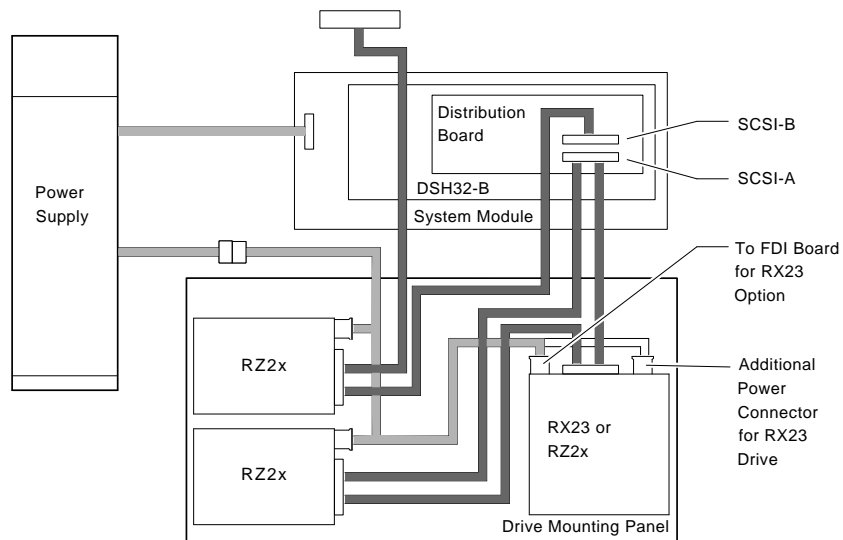
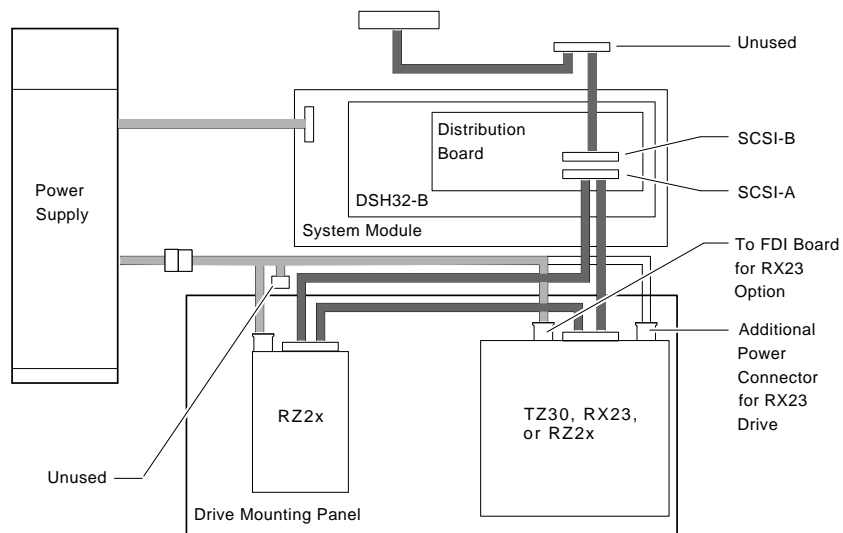
The Industry-Standard SCSI bus provides the following guidelines:

- A maximum of eight devices (IDs) per bus, including one used by the controller, always ID # 6.
- Total bus length not to exceed four meters, including both inside and outside the enclosures.
- The total number of boxes of any type connected to any single SCSI bus shall not exceed four. This includes one host adapter and up to three expansion boxes. There may be multiple devices (and therefore IDs) in a single expansion box.

System Configuration Rules

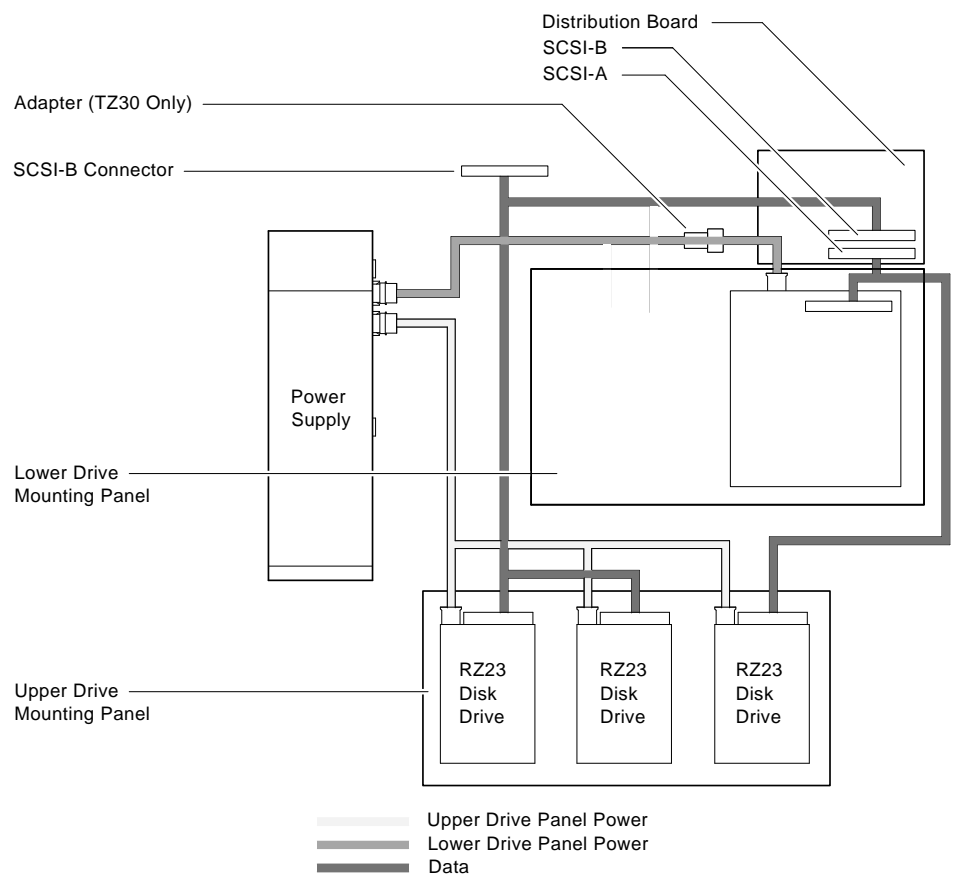
- The Model 10 system has provisions for up to three internal, half-height (3 1/2") devices.
- The Model 20 system has provisions for up to five internal, half-height (3 1/2") devices.

Refer to Figure Disk-1 for possible Device configuration of the lower drive shelf device. Refer to Figure Disk-2 for possible device configuration of the upper drive shelf (Model 20 only).



LJ-00049-T10

Figure Disk-1 Lower Drive Mounting Panel Locations (Model 10 and 20)



LJ-00050-T10

Figure Disk-2 Upper Drive Mounting Panel Locations (Model 20 only)

Disk-4 Disks

- System external expansion is limited by the number of devices contained internally within the system enclosure on the SCSI-B bus. External storage devices are typically full-height (5 1/4") RZ-type disks, contained within either the BA40 or BA42 expansion enclosures.

Available Options

The following table provides a list of the currently available add-on disk options for the MicroVAX 3100 and VAXserver 3100 system. There is one flexible type RX diskette drive available as well as both half-height and full-height hard RZ type disks.

Table Disk-1 Available Options

Number	Capacity	Form Factor	Internal /External
RX23-EP	1.4 Mbyte	Half Height	Internal - Model 10
RX23-EK	1.4 Mbyte	Half Height	Internal - Model 20
RZ23-EF	104 Mbyte	Half Height	Internal - Model 10/20
RZ24-EF	209 Mbyte	Half Height	Internal - Model 10/20
RZ55-FA/F3	332 Mbyte	Full Height	External - BA40
SZ12A-XA/XB	332 Mbyte	Full Height	External - BA42 (1- RZ55)
SZ12A-AA/AB	664 Mbyte	Full Height	External - BA42 (2- RZ55)
SZ12B-XA/XB	665 Mbyte	Full Height	External - BA42 (1- RZ56)
SZ12B-AA/AB	1.3 Gbyte	Full Height	External - BA42 (2- RZ56)
SZ12C-XA/XB	1.0 Gbyte	Full Height	External - BA42 (1- RZ57)
SZ12C-AA/AB	2.0 Gbyte	Full Height	External - BA42 (2- RZ57)

Disks Disk 7

RX23 Disk Drive

RX23 Installation

This section provides instructions for installing an RX23 option into a Model 10 or Model 20 MicroVAX 3100 or VAXserver 3100 system.

CAUTION

Installation of this drive should only be attempted by qualified personnel. Improper installation can result in system damage for which Digital is not responsible. Please contact your Customer Service Representative.

Kit Contents

There are two different RX23 kits available, one for Model 10 systems and one for Model 20 systems. The contents of the kits are given in Table RX23–1.

Table RX23–1 Kit Contents

Description	Part Number	Quantities	
		Model 10 Kit	Model 20 Kit
RX23 diskette drive	RX23-AA	1	1
FDI board	54-19288-01	1	1
Bracket	74-38638-01	1	1
Rubber grommets	90-00018-02	4	4
Panhead screws	12-27886-02	4	4
Ribbon cable	17-02221-02	1	1
Diskette	30-30083-01	2	2
Cover (bezel)	74-39104-01	—	1
Short standoff	12-23824-01	—	1
Fixing (standoffs)	90-11044-01	6	5
Bezel	74-39959-01	1	—
SCSI ROM V1.58	23-061E8-00	1	1

Determining the Revision Level of the SCSI ROM

The RX23 diskette drive option is supported by systems which have a SCSI ROM revision level V1.58 or higher. If the revision level of the SCSI ROM is less than V1.58, the existing ROM must be replaced by the ROM supplied with the RX23 installation kit.

Before you power down the system, determine the revision level of the SCSI ROM as follows:

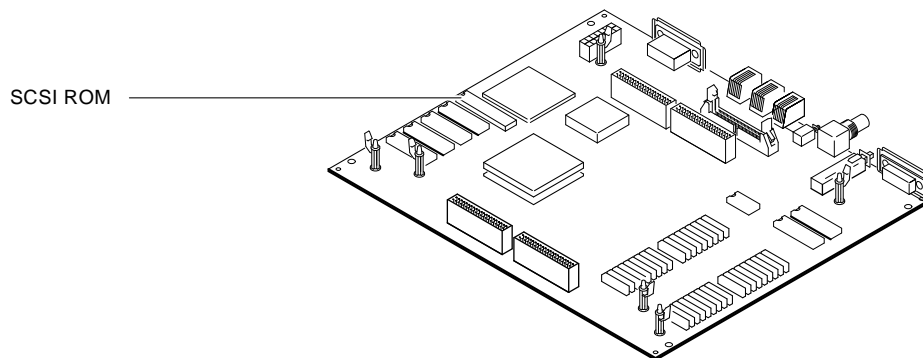
1. Press the halt button on the rear of the system unit to put the system in console mode.
2. At the console prompt (>>>), enter T 50. The system configuration is displayed.
3. Note the revision levels (Vx.xx) on the lines beginning SCSI-A and SCSI-B.

If the revision level is V1.58 or greater, continue with the installation procedure as described in Setting the SCSI ID of the RX23 Option. If the revision level is less than V1.58, replace the ROM as described in Replacing the SCSI ROM.

Replacing the SCSI ROM

Replace the SCSI ROM as follows:

1. Power down the system unit.
2. Disassemble the system to gain access to the System Module. Refer to the FRU Removal and Replacement procedures for Model 10 and Model 20 systems in the *MicroVAX 3100 and VAXserver 3100 Maintenance Guide* (EK-A0372-MG.001).
3. Locate the SCSI ROM identified in Figure RX23-1.



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Figure RX23-1 Location of SCSI ROM on the System Module

4. Carefully remove the ROM from its retaining socket noting the position of pin 1 identified by a notch on the chip.

CAUTION

Be careful not to bend the pins of the new ROM.

5. Install the ROM supplied with the same orientation as the ROM just removed.
6. Reassemble the system.

Setting the SCSI ID of the RX23 Option

Before installation, you must assign a unique SCSI ID number to the RX23 option. If you are unsure about the assignment of SCSI ID numbers to devices, refer to the section entitled SCSI Bus Address ID Settings in the *MicroVAX 3100 and VAXserver 3100 Maintenance Guide*.

NOTE

Perform a "SHOW DEVICE" command at the console prompt to determine the available SCSI ID numbers. This must be done to avoid SCSI ID address duplication. Refer to Appendix C for examples of the "SHOW DEVICE" command.

If you are familiar with the assignment of SCSI IDs, you can set the SCSI ID of the RX23 option using the switches on the FDI board. Figure RX23-2 shows the location of the SCSI ID switches on the FDI board and Table RX23-2 lists the possible SCSI ID switch settings.

RX23-4 RX23 Disk Drive

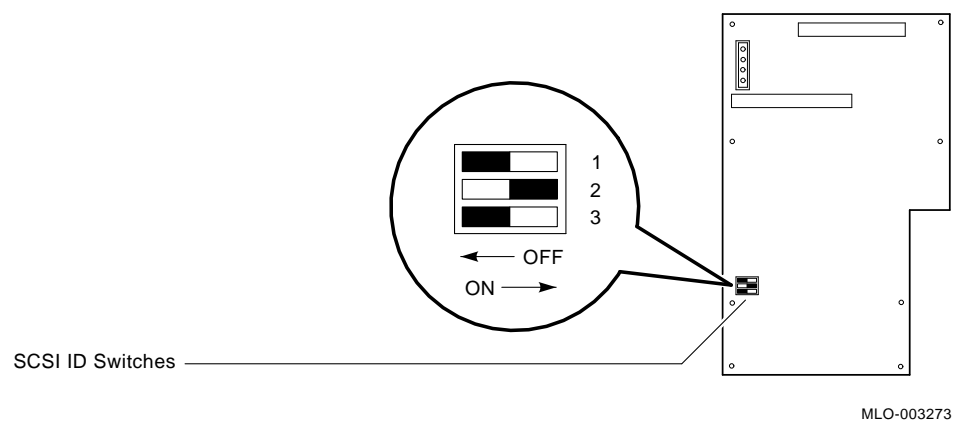


Figure RX23-2 RX23 FDI Board SCSI ID Switch Locations

Table RX23–2 RX23 SCSI ID Switch Settings

SCSI ID	RX23 Switch Settings		
	1	2	3
0 ³	Off	Off	Off
1	Off	Off	On
2	Off	On	Off
3	Off	On	On
4	On	Off	Off
5 ²	On	Off	On
6 ¹	On	On	Off
7 ⁴	On	On	On

¹Reserved address ID for SCSI bus controller.

²Recommended address IDs for RX23 drives on the SCSI-A bus.

³Recommended address IDs for RX23 drives on the SCSI-B bus.

⁴Reserved for the device with the highest priority on the bus.

Installing an RX23 Option in a Model 10 System

Prepare the Model 10 system as follows:

1. Refer to the Model 10 chapter for system disassembly procedure.
2. If there are three RZ23 disk drives in the system unit, you must remove the RZ23 in the right-hand compartment.

Install the RX23 diskette drive option as follows:

1. Ensure that you have all the items listed in Table RX23–1.
2. Insert the four rubber grommets into the holes on the bracket. See Figure RX23–3.
3. Secure the RX23 diskette drive to the bracket using the four panhead screws provided. See Figure RX23–3.

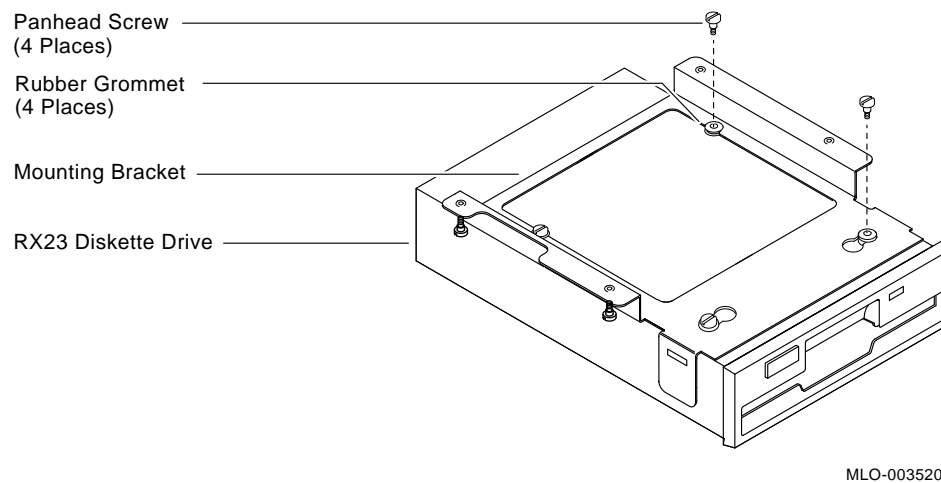
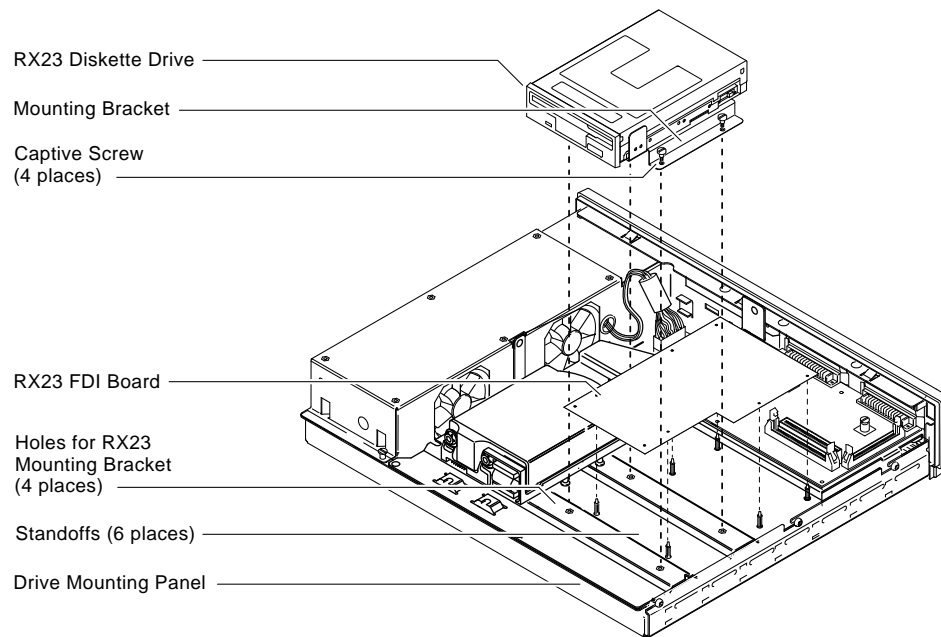


Figure RX23-3 Securing the RX23 to the Bracket

4. Fit the six standoffs to the drive mounting panel. See Figure RX23-4.



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Figure RX23-4 RX23 Installation in Model 10 Systems

5. Connect one end of the the ribbon cable provided to the FDI board.
6. Attach the FDI board to the standoffs. See Figure RX23-4.
7. Secure the drive/bracket assembly to the drive mounting panel using the captive screws on the bracket. See Figure RX23-4.
8. Connect the SCSI cable to the 50-way connector on the FDI board.
9. Connect the other end of the ribbon cable to the RX23 diskette drive.
10. Connect the large 4-way power connector to the FDI board and connect the small 4-way power connector to the RX23 diskette drive.
11. Gently lever the blanking plate out from the front bezel of the system box using a flat screwdriver, taking care not to damage the main bezel.
12. Insert the RX23 bezel provided.
13. Reassemble the system.

RX23-8 RX23 Disk Drive

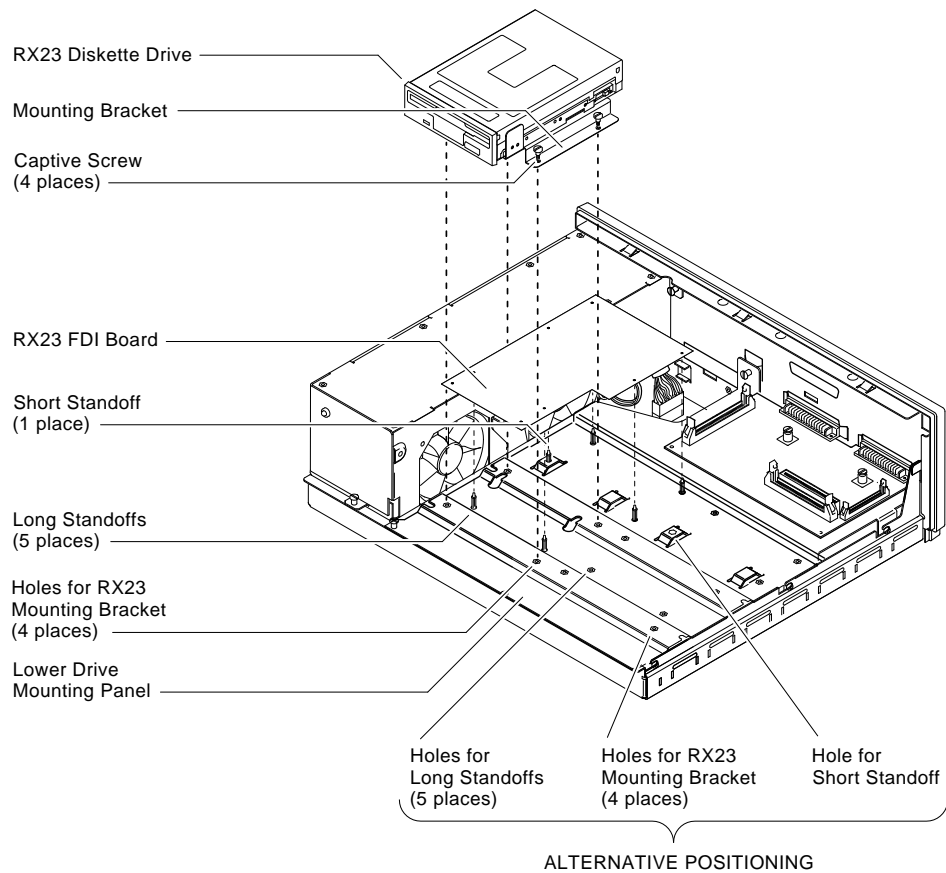
Installing an RX23 Option in a Model 20 System

Prepare the Model 20 system as follows:

1. Refer to the Model 20 chapter for system disassembly procedure.
2. If necessary, remove any device occupying the compartment in which you want to install the RX23. If this device is an RZ23 or RZ24 disk drive, it may be possible to reinstall it on the upper drive mounting panel, depending on the configuration.

Install the RX23 diskette drive option as follows:

1. Ensure that you have all the items listed in Table RX23–1.
2. Insert the four rubber grommets into the holes on the bracket. See Figure RX23–3.
3. Secure the RX23 diskette drive to the bracket using the four panhead screws provided. See Figure RX23–3.
4. Fit the five long standoffs and one short standoff to the lower drive mounting panel. See Figure RX23–5.



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Figure RX23-5 RX23 Installation in Model 20 Systems

NOTE

Figure RX23-5 shows the RX23 diskette drive installed in the left-hand compartment. For systems which do not have a TZ30 tape drive, the RX23 diskette drive should be installed in the right-hand compartment. The alternative positioning of the fittings is shown.

5. Connect one end of the the ribbon cable provided to the FDI board.
6. Attach the FDI board to the standoffs. See Figure RX23-5.
7. Secure the drive/bracket assembly to the lower drive mounting panel using the captive screws on the bracket. See Figure RX23-5.

RX23-10 RX23 Disk Drive

8. Connect the SCSI cable to the 50-way connector on the FDI board.
9. Connect the other end of the ribbon cable to the RX23 diskette drive.
10. Connect the large 4-way power connector to the FDI board and connect the small 4-way power connector to the RX23 diskette drive.
11. Gently lever the blanking plate out from the front of the system box metalwork. This blanking plate is concealed behind the door on the front of the system unit.
12. Insert the RX23 bezel provided.
13. Reassemble the system.
14. Power up any expansion boxes first and then the system box.
15. After power up and a successful completion of self-test, verify the presence of the new device by entering the "SHOW DEVICE" command at the console prompt (>>>). Refer to Appendix C for "SHOW DEVICE" command examples.

Post-Installation Testing

See the section entitled General SCSI Bus Troubleshooting and the section entitled Troubleshooting an RX23 Diskette Drive in the *MicroVAX 3100 and VAXserver 3100 Maintenance Guide* for information on testing the RX23 diskette drive installation.

RZ23 Disk Drive

The following information provides instructions for installing the RZ23 option into a MicroVAX 3100 or VAXserver 3100 system.

CAUTION

Wear an anti-electrostatic wrist strap and use an anti-electrostatic mat when installing or replacing field replaceable units (FRUs).

The RZ23 can only be installed in the system box.

Internal Storage Device Locations

1. Bring the operating system down and halt the system
2. At the console prompt (>>>), enter the "SHOW DEVICE" command to determine the existing SCSI address ID's. Refer to Appendix C for "SHOW DEVICE" command examples.

NOTE

This must be done to avoid possible address duplication.

3. Determine the SCSI address and set the SCSI ID Jumpers using Table RZ23-1 and Figure RZ23-1.

Table RZ23–1 RZ23 SCSI ID Jumper Combinations

Address ID on SCSI Bus	RZ23 Jumper Settings			
	E1	E2	E3	E4
0	Out	Out	Out	Out
1†	In	Out	Out	Out
2†	Out	In	Out	Out
3 ² †	In	In	Out	Out
4	Out	Out	In	Out
5 ²	In	Out	In	Out
6 ¹	Out	In	In	Out
7	In	In	In	Out

¹Reserved address ID for SCSI bus controller.

²Recommended address IDs for the RZ23 drives on SCSI-A bus.

†Recommended address IDs for the RZ23 drives on SCSI-B bus.

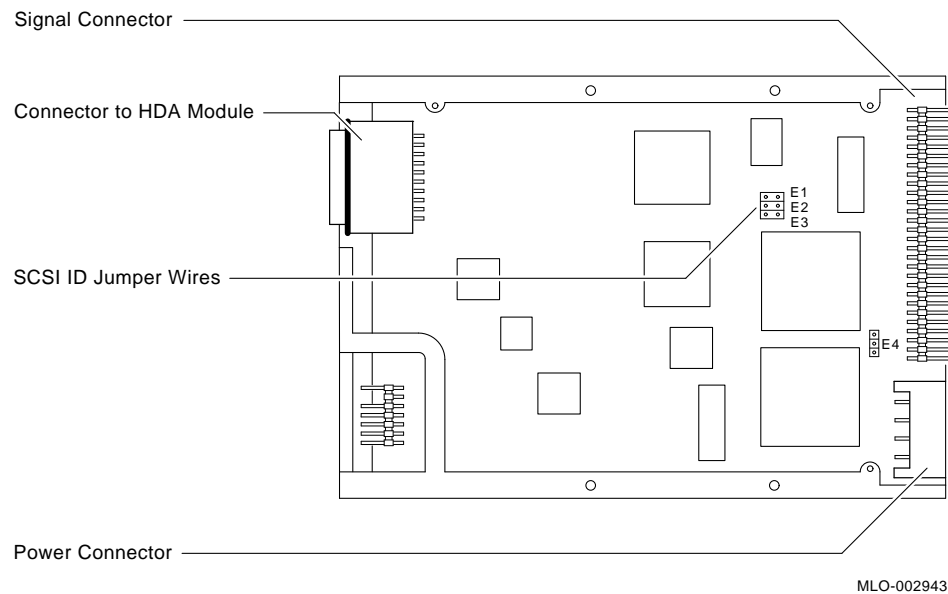


Figure RZ23–1 RZ23 SCSI Jumper Locations

4. Power down the system box and any expansion boxes.
5. Refer to either the Model 10 or Model 20 chapter for the system disassembly procedure.

NOTE

Refer to the system configuration rules in the DISK chapter for possible drive locations.

6. Install the disk drive in the desired location and secure it in place, using only the four philips pan-head screws.
7. Refer to either the Model 10 or Model 20 chapter for the system reassembly procedure.
8. Power up any expansion boxes first and the system box last.

9. After power up and a successful completion of the self-tests, verify the presence of the RZ23 by entering the "SHOW DEVICE" command at the console prompt (>>>) and noting the RZ23 under the DEVNAM column. Refer to Appendix C for "SHOW DEVICE" command examples.

RZ24 Disk Drive

RZ24 Installation

CAUTION

Wear an anti-electrostatic wrist strap and use an anti-electrostatic mat when installing or replacing field replaceable units.

IMPORTANT

The RZ24 can only be installed in the system box.

This section provides instructions for installing an RZ24 option into a MicroVAX 3100 or VAXserver 3100 system.

CAUTION

Installation of this drive should only be attempted by qualified personnel. Improper installation can result in system damage for which Digital is not responsible.

Please contact your Customer Service Representative.

Installing the RZ24 Option

1. Bring the operating system down.
2. At the console prompt (>>>), enter the "SHOW DEVICE" command to determine the existing SCSI address ID's. Refer to Appendix C for "SHOW DEVICE" command examples.

NOTE

This must be done to avoid possible address duplication.

3. Determine the SCSI address and set the SCSI ID Jumpers using Table RZ24-1 and Figure RZ24-1.

Table RZ24–1 RZ24 SCSI ID Jumper Combinations

Address ID on SCSI Bus	RZ24 Jumper Settings			
	E1	E2	E3	E4
0	Out	Out	Out	Out
1†	In	Out	Out	Out
2†	Out	In	Out	Out
3 ² †	In	In	Out	Out
4	Out	Out	In	Out
5 ²	In	Out	In	Out
6 ¹	Out	In	In	Out
7	In	In	In	Out

¹Reserved address ID for SCSI bus controller.

²Recommended address IDs for the RZ24 drives on SCSI-A bus.

†Recommended address IDs for the RZ24 drives on SCSI-B bus.

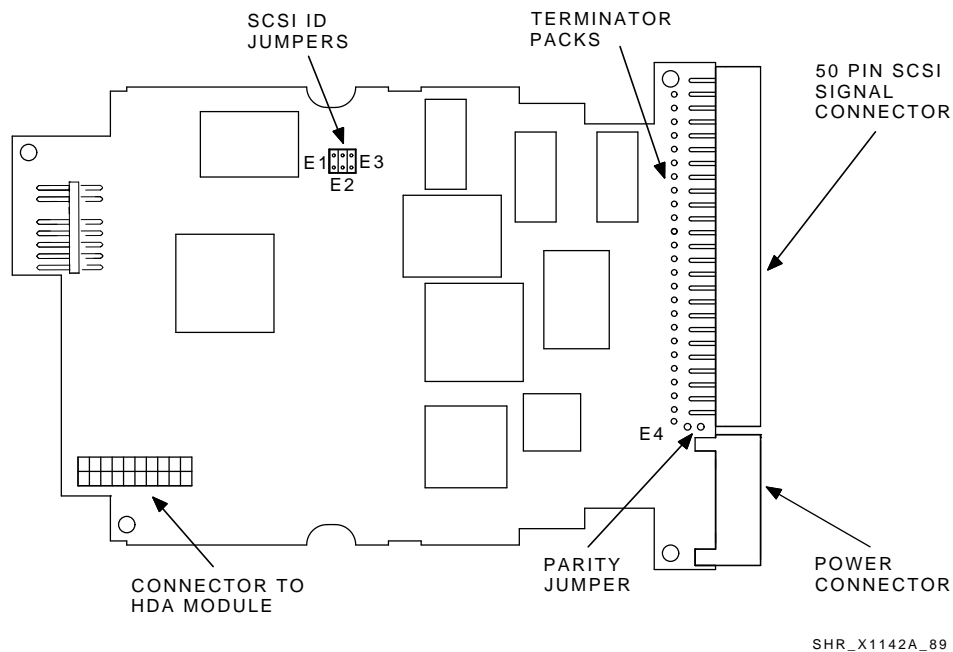


Figure RZ24-1 RZ24 Jumpers

4. Power down the system box and expansion boxes (if applicable).
5. Refer to either the Model 10 or Model 20 chapter for the disassembly procedure.

NOTE

Refer to the system configuration rules in the DISK chapter for possible drive locations.

6. Install the disk drive in the desired location and secure it in place, using the four Philips pan-head screws provided.
7. Refer to either the Model 10 or Model 20 chapter for the reassembly procedure.
8. Power up any expansion boxes first and then the system box.

9. After power up and a successful completion of self-test, verify the presence of the new device by entering the "SHOW DEVICE" command at the console prompt (>>>) and noting the RZ24 under the DEVNAM column. Refer to Appendix C for "SHOW DEVICE" command examples.

RZ55 (in BA40 Disk Expansion Box)

This chapter provides instructions for connecting the RZ55/BA40 Disk expansion to the MicroVAX 3100 or VAXserver 3100 system.

For information regarding the connection of the RZ55 in the BA42 expansion box, refer to chapter SZ12x.

The BA40 disk expansion box connects to the system box through the external SCSI port. The SCSI cable connects to either of the two ports on the back of the expansion box. However, the SCSI terminator must be installed on the unused connector unless another expansion box is daisy chained.

If the SCSI port already has a box connected to it, use another SCSI cable to connect the BA40 disk expansion box to the last box on the daisy chain. Be sure to move the terminator onto the unused connector on the back of the last expansion box in the daisy chain. Figure RZ55-2 and Figure RZ55-3 show how the BA40 disk expansion box(es) connect to the system box.

Adding a Single BA40 Disk Expansion Box

1. Bring the operating system down and halt the system.
2. At the console prompt (>>>), enter the "SHOW DEVICE" command to determine the existing SCSI address ID's. Refer to Appendix C.
3. Determine the SCSI address and set the SCSI ID Jumpers using Table RZ55-1 and Figure RZ55-1.

NOTE

This must be done to avoid possible address duplication.

Table RZ55–1 SCSI Address and SCSI ID Jumper Settings

Address ID on SCSI Bus	BA40 Disk Expansion Box Switch Settings		
	1	2	3
0	Down	Down	Down
1 ¹	Down	Down	Up
2	Down	Up	Down
3	Down	Up	Up
4	Up	Down	Down
5	Up	Down	Up
6 ²	Up	Up	Down
7	Up	Up	Up

¹Recommended address ID for the RZ55 disk drive.

²Reserved address ID for SCSI controller.

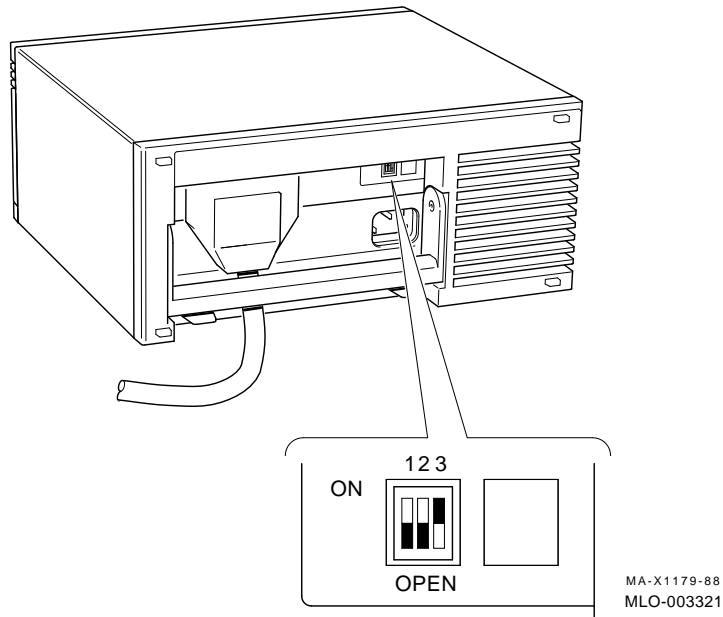


Figure RZ55-1 BA40 Disk Expansion Box SCSI ID Switch Locations

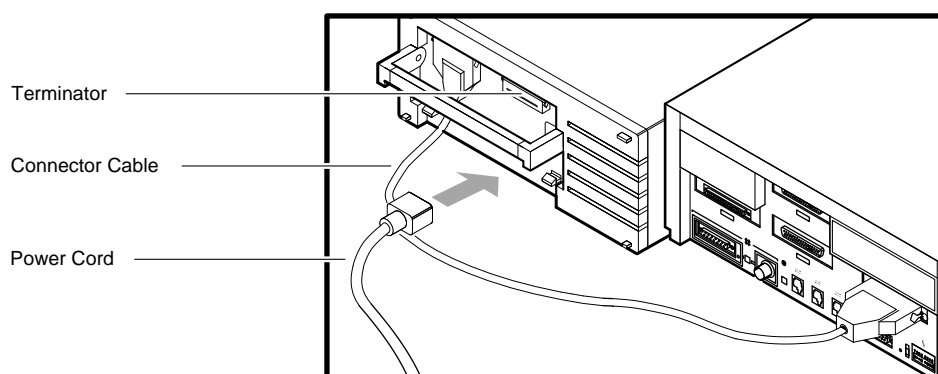
4. Power down the system box and any expansion boxes.
5. Connect the SCSI data cable from the BA40 to the SCSI-B port connector on the system box, making sure the bail locks have been secured in place.
6. Install the SCSI terminator on the rear of the BA40, making sure the bail locks have been secured in place. (Refer to Figure RZ55-2).
7. Connect the power cord to the expansion box receptacle. (Refer to Figure RZ55-2).

IMPORTANT

If you have more than one expansion box, plug all expansion boxes into the same power source.

8. Power up the expansion boxes first and then the system box.

9. After power up and a successful completion of the self-tests, verify the presence of the RZ55 by entering the "SHOW DEVICE" command at the console prompt (>>>) and noting the new device under the DEVNAM column. Refer to Appendix C for the "SHOW DEVICE" command examples.



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Figure RZ55-2 RZ55 Expansion Box Connection

Adding Multiple BA40 Disk Expansion Boxes

1. Bring the operating system down and halt the system.
2. At the console prompt (>>>), enter the "SHOW DEVICE" command to determine the existing SCSI address ID's. Refer to Appendix C for the "SHOW DEVICE" command examples.

NOTE

This must be done to avoid possible address duplication.

3. Determine the SCSI address and set the SCSI ID Jumpers using Table RZ55-1 and Figure RZ55-1.
4. Power down the system box and any expansion boxes.
5. Connect the SCSI expansion cable from the first BA40 Disk expansion box to the system box, making sure the bail locks have been secured in place (Refer to Figure RZ55-3).

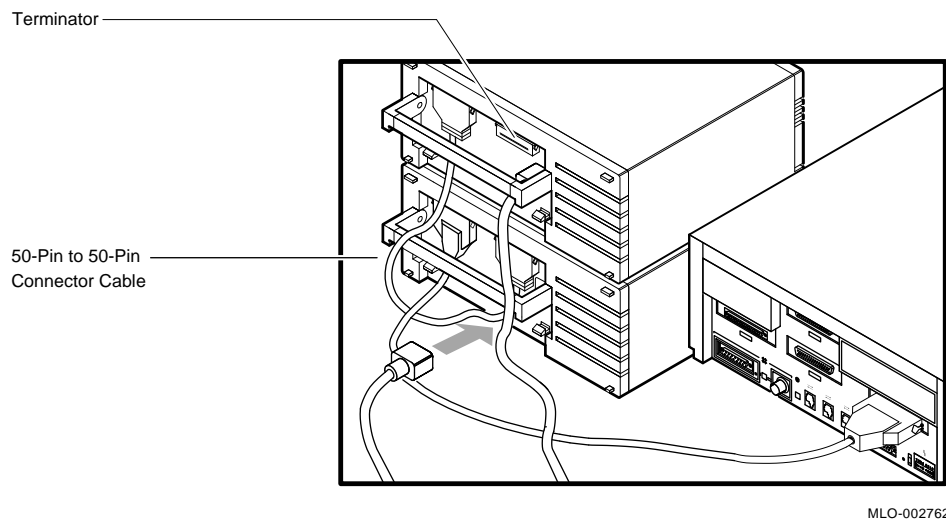


Figure RZ55-3 Dual BA40 Disk Expansion Connections

6. Connect the SCSI expansion cable from the second BA40 to the first BA40 Disk expansion box, making sure the bail locks have been secured in place (Refer to Figure RZ55-3).

7. Install the SCSI terminator on the rear of the last BA40, making sure the bail locks have been secured in place (Refer to Figure RZ55–3).
8. Connect the power cord to the expansion box receptacle. (Refer to Figure RZ55–3).

IMPORTANT

If you have more than one expansion box, plug all expansion boxes into the same power source.

9. Power up the expansion box(es) first and then the system box.
10. After power up and a successful completion of the self-tests, verify the presence of the RZ55 by entering the "SHOW DEVICE" command at the console prompt (>>>) and noting the new device under the DEVNAM column. Refer to Appendix C for the "SHOW DEVICE" command examples.

SZ12x (in BA42 Disk Expansion Box)

Installation and Upgrade of the SZ12x (BA42)

This section refers to the installation, and upgrade, of the SZ12x (BA42) storage expansion box. It includes details for setting up and using the storage expansion box for the first time, and information on adding a storage device to the storage expansion box.

An expansion box is an external box that connects to your system unit to provide additional disk storage space.

The storage expansion box holds the following devices:

- RZ55 - 332-megabyte full-height SCSI disk
- RZ56 - 665-megabyte full-height SCSI disk
- RZ57 - 1.0-gigabyte full-height SCSI disk

The preceding drives come in preconfigured combinations contained within the BA42 expansion box (Refer to Table SZ12x-1).

Storage Expansion Box Configurations

Table SZ12x-1 Storage Expansion Box Configurations

Description	Order Number
Single RZ55 expansion box	SZ12A-XA/XB
Double RZ55 expansion box	SZ12A-AA/AB
Single RZ56 expansion box	SZ12B-XA/XB
Double RZ56 expansion box	SZ12B-AA/AB
Single RZ57 expansion box	SZ12C-XA/XB
Double RZ57 expansion box	SZ12C-AA/AB

Guidelines for Connecting Storage Expansion Boxes

- You can connect up to three expansion boxes as long as you do not connect more than six devices.
- You must connect the SCSI terminator (50 pin) that comes with your storage expansion box to the unused SCSI port on the back of the last expansion box on the bus.
- All expansion boxes should be plugged into the same power source or electrical outlet.
- The length of cable from the SCSI expansion port on the system unit to the last device on the SCSI bus must not exceed 4 m (13 ft).
- Be sure to power on the expansion boxes in the following order (prior to powering on the system unit):
 1. Disk storage expansion box
 2. TK50Z tape expansion box
 3. RRD40 compact disk expansion box

Connecting One Expansion Box

To connect one expansion box to your system unit, perform the following steps:

1. Bring the operating system down and halt the system.
2. At the console prompt (>>>), enter the "SHOW DEVICE" command to determine the existing SCSI address ID's. Refer to Appendix C for "SHOW DEVICE" command examples.

NOTE

This must be done to avoid possible address duplication.

3. Unpack the expansion box and place it with the back of the unit facing you.
4. Make sure that the power switch is in the off (0) position.

5. To set the SCSI ID switch positions, do the following:
 - a. Remove the SCSI switch cover by placing your fingers under the locking tab and lifting the cover to release it (Refer to Figure SZ12x-1).

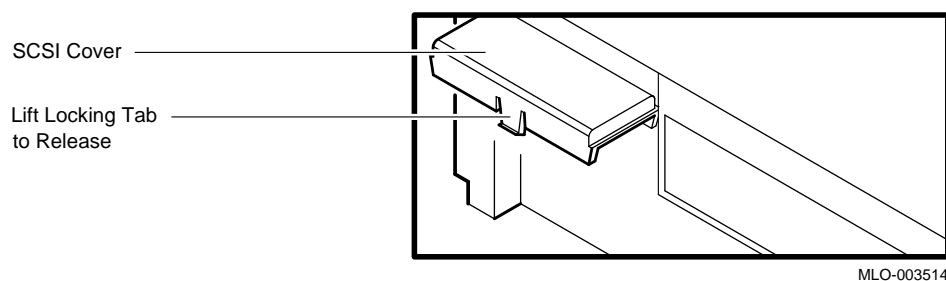


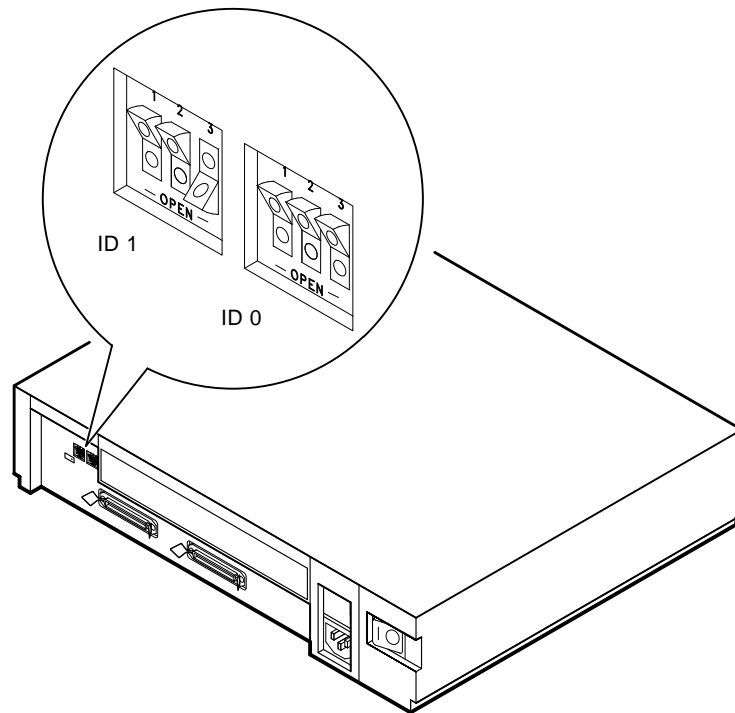
Figure SZ12x-1 Removing the SCSI Switch Cover on the Expansion Box

- b. Determine the SCSI address and set the SCSI ID jumpers using Table SZ12x-2, Figure SZ12x-2.

Table SZ12x-2 SZ12x Expansion Box SCSI Address ID's and Switch Positions

Address ID on SCSI Bus	SZ12x Expansion Box Switch Settings		
	1	2	3
0	Down	Down	Down
1	Down	Down	Up
2	Down	Up	Down
3	Down	Up	Up
4	Up	Down	Down
5	Up	Down	Up
6	Up	Up	Down
7	Up	Up	Up

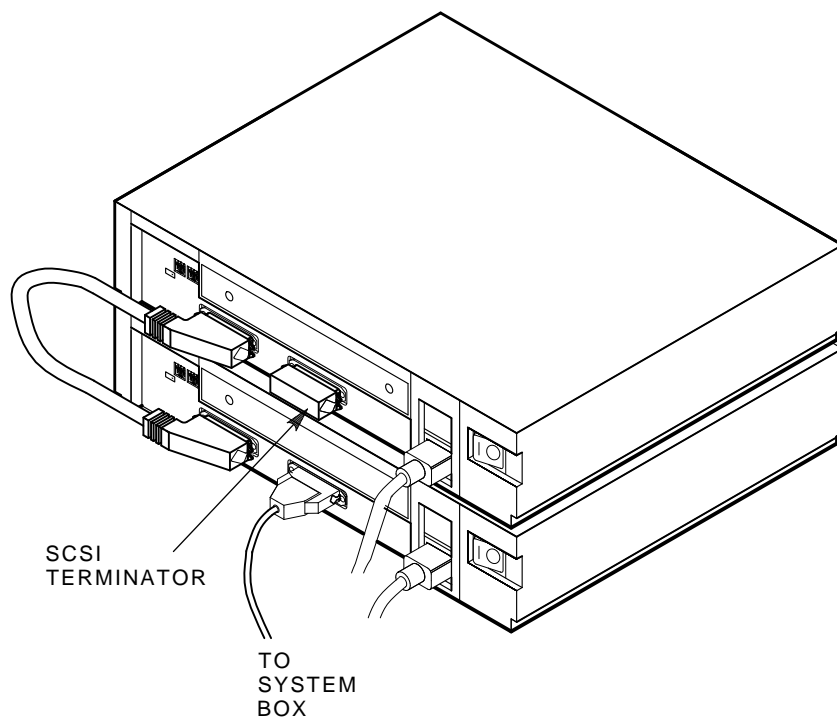
SZ12x-4 SZ12x Disk Drive



MLO-003462

Figure SZ12x-2 SCSI Switch Settings on Storage Expansion Box

- c. To reset a SCSI select switch, use a pen or small pointed object to flip the switch.
6. Replace the SCSI select switch cover.
7. Power down the system unit.
8. Place the SZ12x expansion box on top of the system box.
9. Connect the 50-pin SCSI I/O cable from the expansion box to the SCSI-B port connector on the system unit (Refer to Figure SZ12x-3).



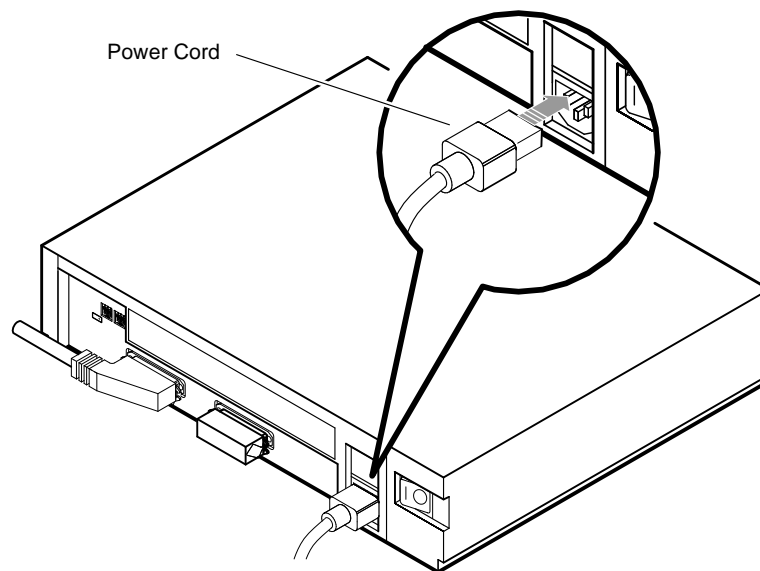
GSF_1256_89.DG

Figure SZ12x-3 SCSI I/O Cable Connection

10. Rotate the bail lock loops forward to lock cable(s) into place.
11. Connect the SCSI terminator (50-pin) to the unused port on the storage expansion box.
12. Connect the power cord to the expansion box receptacle (Refer to Figure SZ12x-4).

NOTE

If you have more than one expansion box, plug all expansion boxes into the same power source.



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Figure SZ12x-4 Connecting the Power Cord

13. Power up the expansion boxes in the previously recommended order. Refer to Guidelines for Connecting Storage Expansion Boxes.
14. Power up the system box (last).
15. At the console prompt (>>>), again enter the "SHOW DEVICE" command to display the current SCSI storage devices on the system. Ensure that all devices are recognized and that each device has its own unique SCSI ID. Refer to Appendix C for "SHOW DEVICE" command examples.

Daisy-Chaining Two Expansion Boxes

You can add additional expansion boxes by daisy-chaining (linking two expansion boxes together in a series).

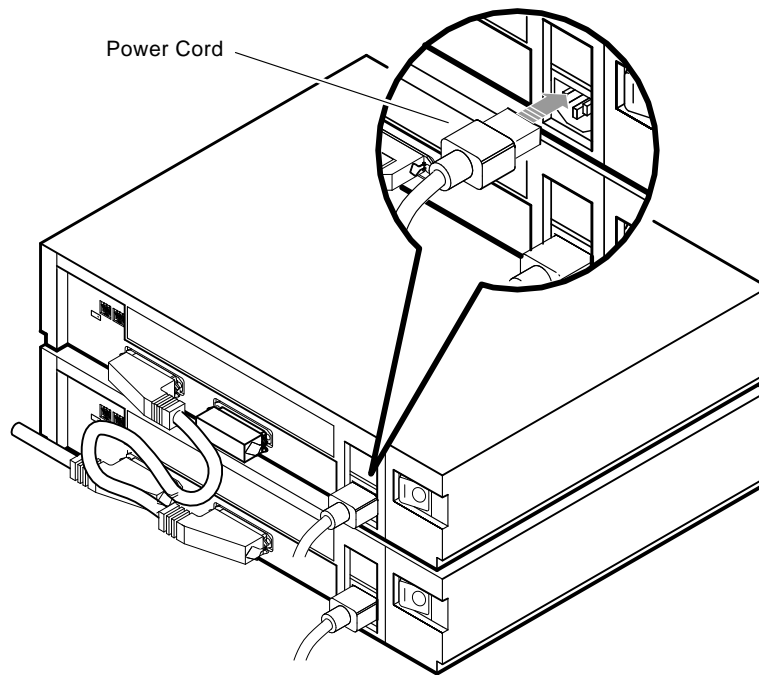
To daisy-chain one expansion box to another expansion box, follow the instructions below:

1. Bring the operating system down and halt the system.
2. At the console prompt (>>>), enter the "SHOW DEVICE" command to determine the existing SCSI address ID's. Refer to Appendix C for "SHOW DEVICE" command examples.

NOTE

This must be done to avoid possible address duplication.

3. Make note of the used SCSI IDs and power down the entire system.
4. Remove the 50-pin terminator on the first expansion box.
5. Connect the SCSI I/O cable from the available port on the first expansion box to the first port on the second expansion (Refer to Figure SZ12x-5).



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Figure SZ12x-5 Connecting the SCSI I/O Cable

6. Attach the 50-pin terminator to the unused SCSI port on the expansion box
7. Refer back the the previous section on single expansion box installation for information on setting the SCSI address ID, and configure the second expansion box accordingly.
8. Connect the power cord to the expansion box power receptacle and plug the other end into a common electrical outlet.
9. Power up the expansion boxes in the previously recommended order. Refer to Guidelines for Connecting Storage Expansion Boxes.
10. Power up the system box (last).

11. At the console prompt (>>>), again enter the "SHOW DEVICE" command to display the current SCSI storage devices on the system. Ensure that all devices are recognized and that each device has its own unique SCSI ID. Refer to Appendix C for "SHOW DEVICE" command examples

Adding a Disk Drive

This Section describes how to install a second disk drive inside your BA42 disk storage expansion box. For the available add-on disks refer to Table SZ12x-3.

Table SZ12x-3 Additional Disks for SCSI Expansion Boxes

Order Number	Description
RZ55-UK	One 332-Mbyte disk drive add-on for BA42
RZ56-UK	One 665-Mbyte disk drive add-on for BA42
RZ57-UK	One 1.0-Gbyte disk drive add-on for BA42

Installing the Additional Drive

1. Bring the operating system down and halt the system.
2. At the console prompt (>>>), enter the "SHOW DEVICE" command to determine the existing SCSI address ID's. Refer to Appendix C for "SHOW DEVICE" command examples.

NOTE

This must be done to avoid possible address duplication.

3. Power off your equipment in the following order:
 1. Expansion boxes
 2. Printer, modem, or other equipment
 3. System unit and monitor
4. Disconnect all cables from the expansion box (which the additional disk is to be installed in) and place the expansion box in a suitable place to be worked on.

5. Take precautions to protect devices from possible damage due to electrostatic discharge.

CAUTION

Wear an anti-electrostatic wrist strap and use an anti-electrostatic mat when handling devices that are inside the expansion box.

6. Remove the expansion box cover by loosening the two captive screws (Refer to Figure SZ12x-6).

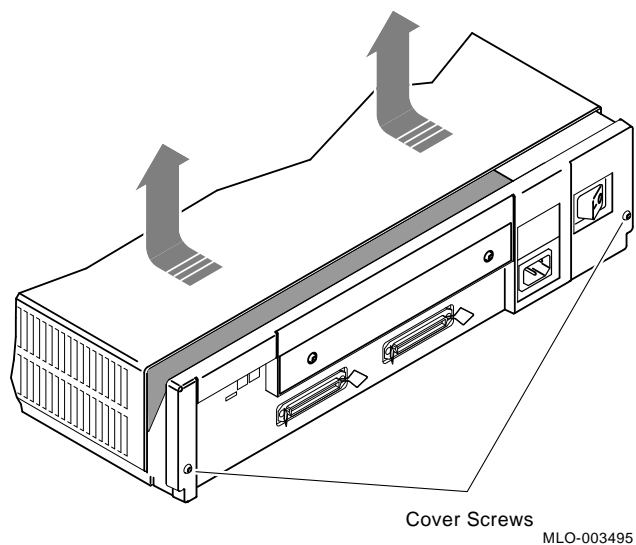
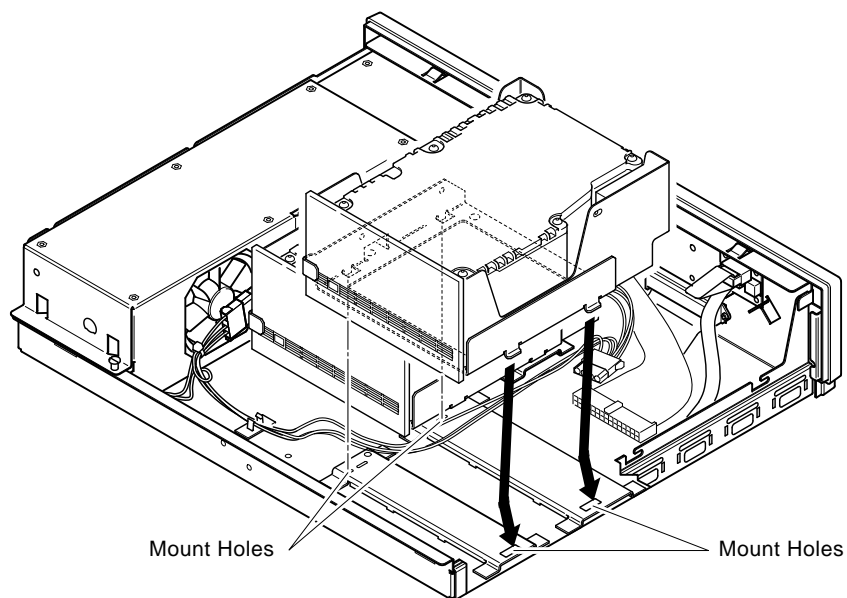


Figure SZ12x-6 Removing the Expansion Box Cover

7. Place the expansion box so that the front is facing you.

8. Slide the three internal cables inside the expansion box out of the restraining clamp.
9. Tilt the disk drive as you place it in the drive's mount holes (Refer to Figure SZ12x-7).



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Figure SZ12x-7 Mounting the Drive

10. Secure the drive by tightening the mounting screw on the drive you just mounted (Refer to Figure SZ12x-8).

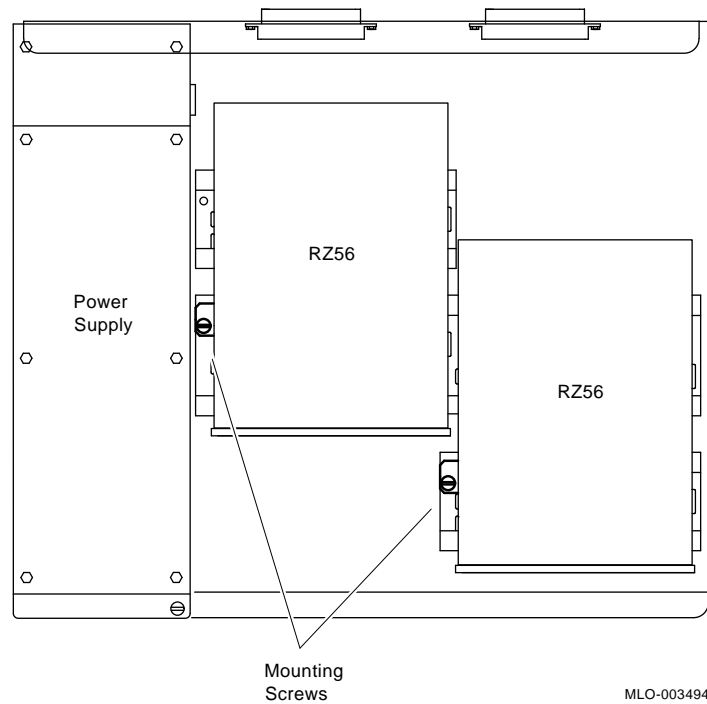
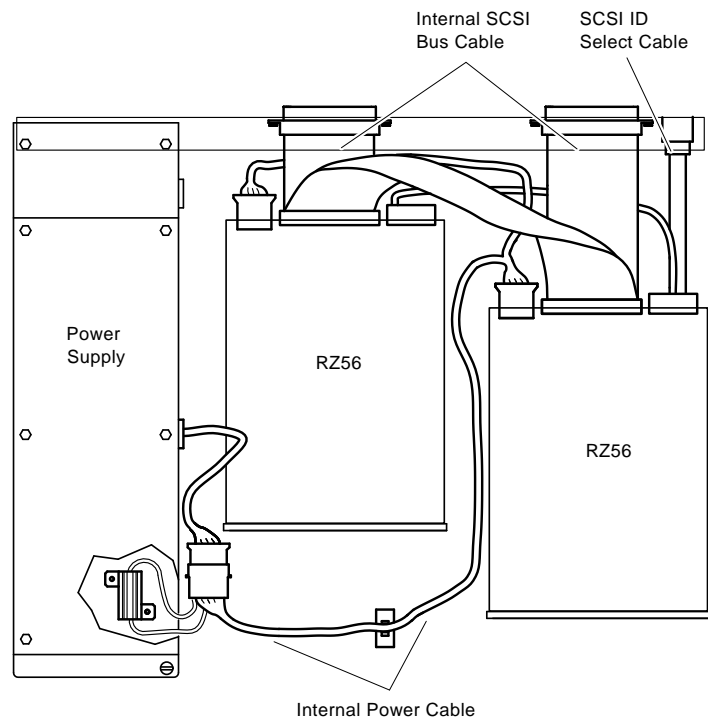


Figure SZ12x-8 Securing the Drive

11. Connect the following cables to the back of the drive (Refer to Figure SZ12x-9).
 - Internal power cable
 - Internal SCSI bus cable
 - Internal SCSI ID select cable



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Figure SZ12x-9 Connecting the Cables

12. Fold the internal cables out of the way of the expansion box cover.
13. Replace the expansion box cover and tighten the two captive cover screws.
14. Reconnect the power and SCSI data cables to the expansion box.
15. Refer back to Table SZ12x-2 and Figure SZ12x-2 for information on setting the SCSI address IDs.
16. Turn on the system in the following order:
 1. SZ12x expansion box(es)
 2. TK50Z tape expansion box (if applicable)

SZ12x-14 SZ12x Disk Drive

3. RRD40 compact disk expansion box (if applicable)
 4. Printer(s) and/or modem. (if applicable)
 5. System Unit and monitor
17. After a successful completion of the self-tests, enter the "SHOW DEVICE" command to display the current SCSI storage devices on the system. Ensure all devices are recognized and each device has its own unique SCSI ID. Refer to Appendix C for "SHOW DEVICE" command examples.

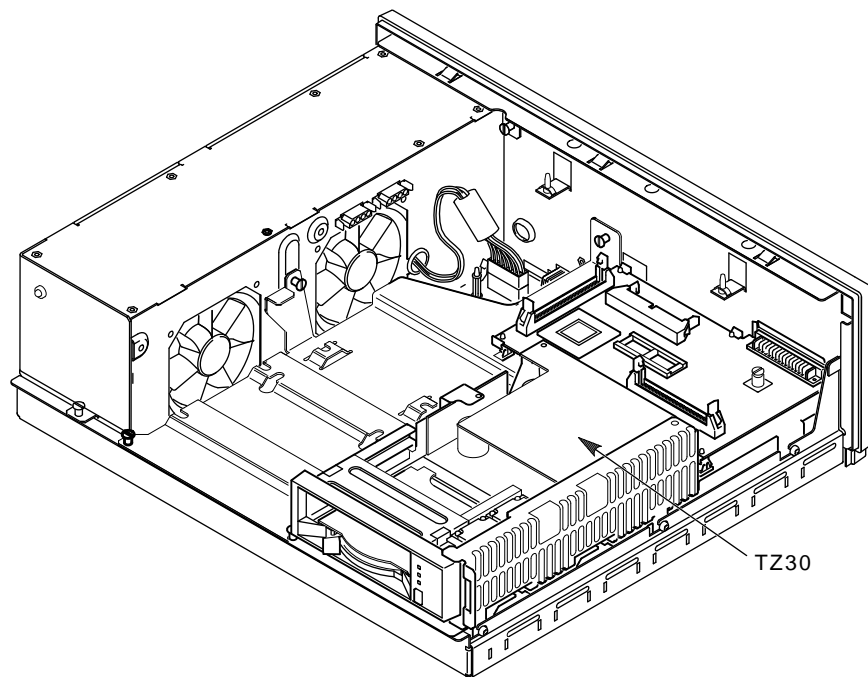
TZ30 Tape Drive

The MicroVAX 3100 and VAXserver 3100 tape drive options are divided into both internal and external options in relation to the system box.

TZ30 Tape Drive

The TZ30 tape drive option can only be installed in the system box.

It can only be positioned in the lower right-hand storage compartment of the lower shelf, as viewed from the front.



LJ-00051-T10

Figure TZ30-1 Installing TZ30 Tape Drive

TZ30 Tape Drive Installation Procedure

1. Bring the Software Operating System down and halt the system.
2. At the console prompt (>>>), enter the command "SHOW DEVICE" to determine existing SCSI address ID's. Refer to Appendix C for "SHOW DEVICE" command examples.

TZ30-2 TZ30 Tape Drive

NOTE

This must be done to avoid possible address duplication.

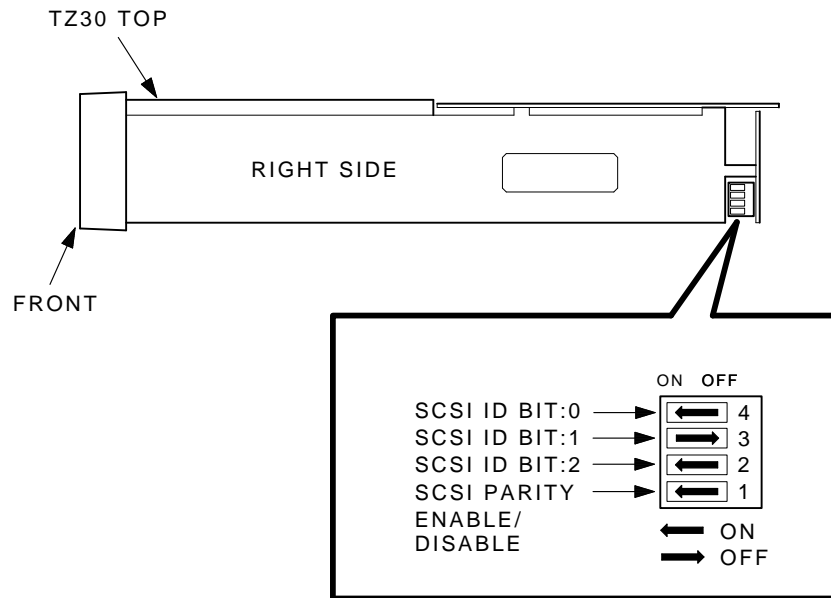
3. Determine the SCSI address and set the SCSI ID switches on the TZ30 tape drive using Table TZ30–1 and Figure TZ30–2 for SCSI ID jumper location.

Table TZ30–1 TZ30 SCSI ID Switch Settings

Address ID on SCSI Bus	TZ30 Jumper Settings			
	4	3	2	1
0	Off	Off	Off	Off
1	On	Off	Off	Off
2	Off	On	Off	Off
3	On	On	Off	Off
4	Off	Off	On	Off
5 ²	On	Off	On	Off
6 ¹	Off	On	On	Off
7	On	On	On	Off

¹Reserved address ID for SCSI bus controller.

²Recommended address IDs for the TZ30 tape drive.

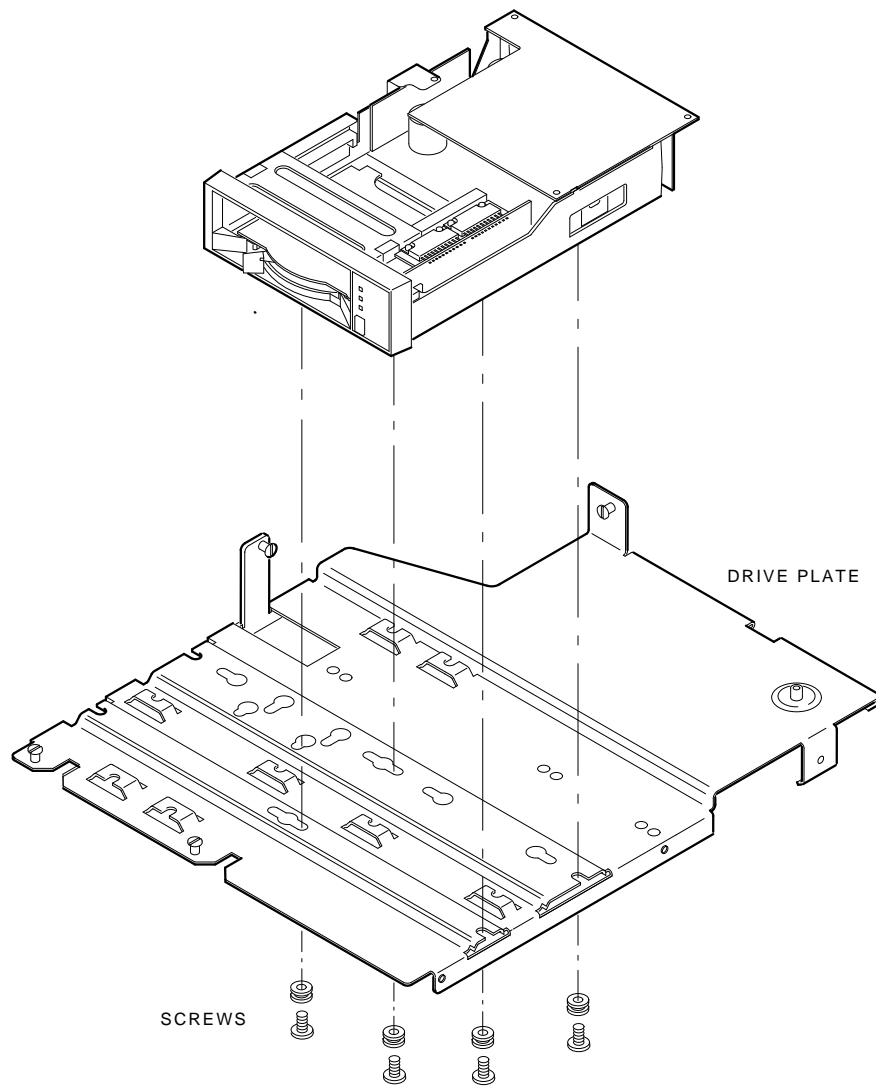


EXAMPLE OF SCSI ID SET TO 5 WITH PARITY ON.

MA-X1084-88

Figure TZ30-2 TZ30 SCSI ID Switch Locations

4. Power off the system box and expansion boxes (if applicable).
5. Refer to either the Model 10 or the Model 20 chapter for the disassembly procedure.
6. Using the four slotted screws and four rubber grommets, mount the tape drive into the lower drive shelf (Refer to Figure TZ30-3).



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Figure TZ30-3 Mounting Tape Drive in Lower Drive Shelf

7. Connect the SCSI data cable.
8. Connect the DC power connector to the rear of the TZ30 tape drive.
9. Refer to either the Model 10 or Model 20 chapter for the reassembly procedures.
10. Power up the system, making sure that all expansion boxes are powered on first (if applicable).
11. After power up and successful completion of Self-Test, verify presence of the tape drive just intalled by entering the "SHOW DEVICE" command at the console prompt (>>>), and noting the tape under the DEVTYPE column. Refer to Appendix C for "SHOW DEVICE" command examples.

TK50Z Tape Drive (in a BA40 Expansion Box)

The MicroVAX 3100 and VAXserver 3100 tape drive options are divided into both intrnal and external options in relation to the system box.

The TK50Z tape drive option is offered in a BA40 Expansion Box.

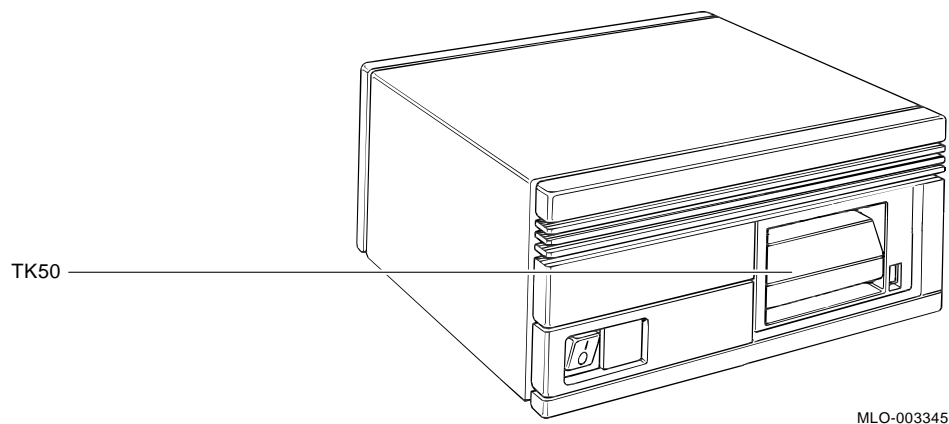


Figure TK50Z-1 TK50Z Expansion Box

TK50Z Tape Drive TK50Z-1

This expansion box connects to the system box through the external SCSI (B) port. The SCSI cable connects to either of the two ports on the back of the expansion box. The SCSI terminator must be installed on the unused connector unless another expansion box is daisy chained. If the external SCSI port has a box already connected to it, you must use another cable to connect the TK50Z expansion box to the last box on the daisy chain. Be sure to move the terminator onto the unused connector on the back of the last expansion box in the daisy chain.

TK50Z Installation Procedure

1. Bring the Software Operating System down and halt the system.
2. At console prompt (>>>), enter the command "SHOW DEVICE" to determine existing SCSI address ID's. Refer to Appendix C for "SHOW DEVICE" command examples.

NOTE

This must be done to avoid possible address duplication.

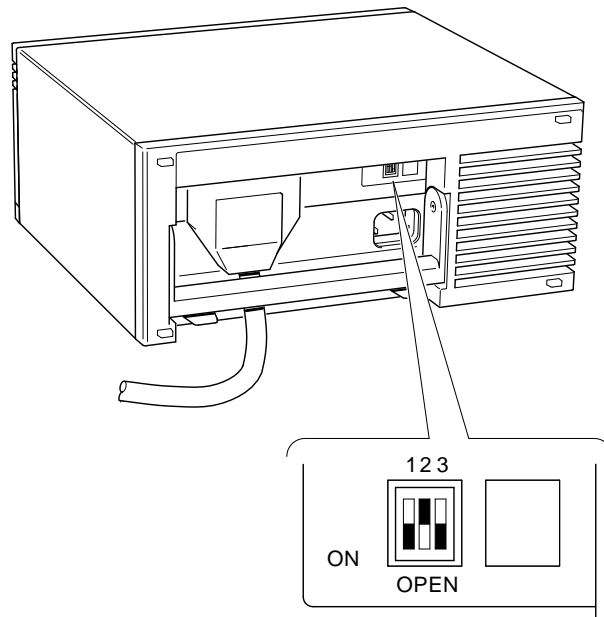
3. Determine the SCSI address and set the SCSI ID jumpers on the TK50Z expansion box using Table TK50Z-1 and Figure TK50Z-2.

Table TK50Z-1 TK50Z-GA SCSI ID Switch Settings

Address ID on SCSI Bus	TK50Z-GA Expansion Box Switch Settings		
	1	2	3
0	Up	Up	Up
1	Up	Up	Down
2	Up	Down	Up
3	Up	Down	Down
4	Down	Up	Up
5 ²	Down	Up	Down
6 ¹	Down	Down	Up
7	Down	Down	Down

¹Reserved address ID for SCSI bus controller.

²Recommended address ID for the TK50Z-GA expansion box.



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MLO-003320

Figure TK50Z-2 TK50Z-GA SCSI Address ID Switch Settings

4. Power off the system box and expansion boxes (if needed).
5. Connect the TK50Z expansion box. Make sure that the SCSI terminator is installed. If more than one expansion box is present in the configuration connect the SCSI terminator at the end of the daisy chain (Refer to Figure TK50Z-3).

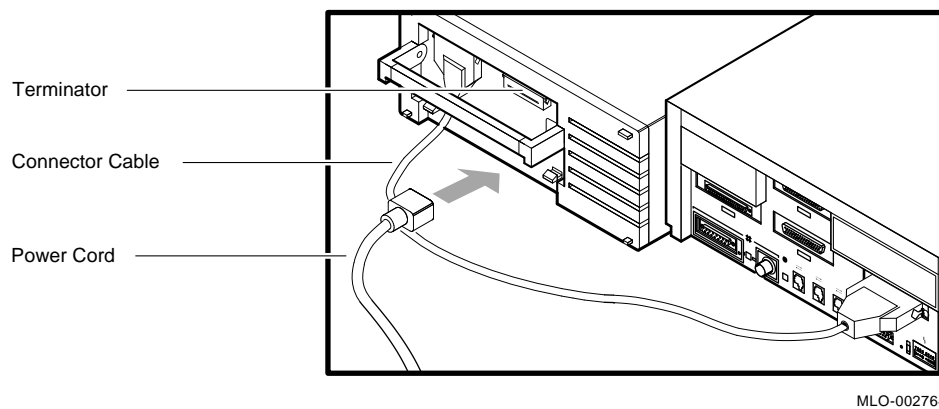


Figure TK50Z-3 TK50Z Expansion Box Connection

6. Power up the system, making sure that all expansion boxes are powered on first (if applicable).
7. After power up and successful completion of Self-Test, verify presence of the tape drive just installed by entering the "SHOW DEVICE" command at the console prompt (>>>), and noting the Tape under the DEVTYPE column. Refer to Appendix C for "SHOW DEVICE" command examples.

TK50Z-4 TK50Z Tape Drive

CD ROMs

This chapter provides instructions for installing the CD ROM options that are available for the MicroVAX 3100 and VAXserver 3100 systems.

The RRD40 is available as a desktop expansion box only in it's own enclosure.

CD ROM Installation Procedure

1. Bring the operating system down and halt the system.
2. At the console prompt (>>>), enter the "SHOW DEVICE" command to determine the existing SCSI address ID's. Refer to Appendix C for "SHOW DEVICE" command examples.

NOTE

This must be done to avoid possible address duplication.

3. Determine the SCSI address and set the SCSI ID Switch Settings by using Table CD-1 and Figure CD-1.

Table CD–1 RRD40 Expansion Box Switch Settings

Address ID on SCSI Bus	RRD40 Expansion Box Switch Settings			
	1	2	3	4¹
0	Down	Down	Down	Not Used
1	Down	Down	Up	Not Used
2	Down	Up	Down	Not Used
3	Down	Up	Up	Not Used
4 ³	Up	Down	Down	Not Used
5	Up	Down	Up	Not Used
6 ²	Up	Up	Down	Not Used
7	Up	Up	Up	Not Used

¹Because switch 4 is unused, it can be in either position.

²Reserved address ID for SCSI bus controller.

³Recommended address ID for the RRD40 compact disk drive.

NOTE

The SCSI ID switch is located on the rear bezel of the RRD40.

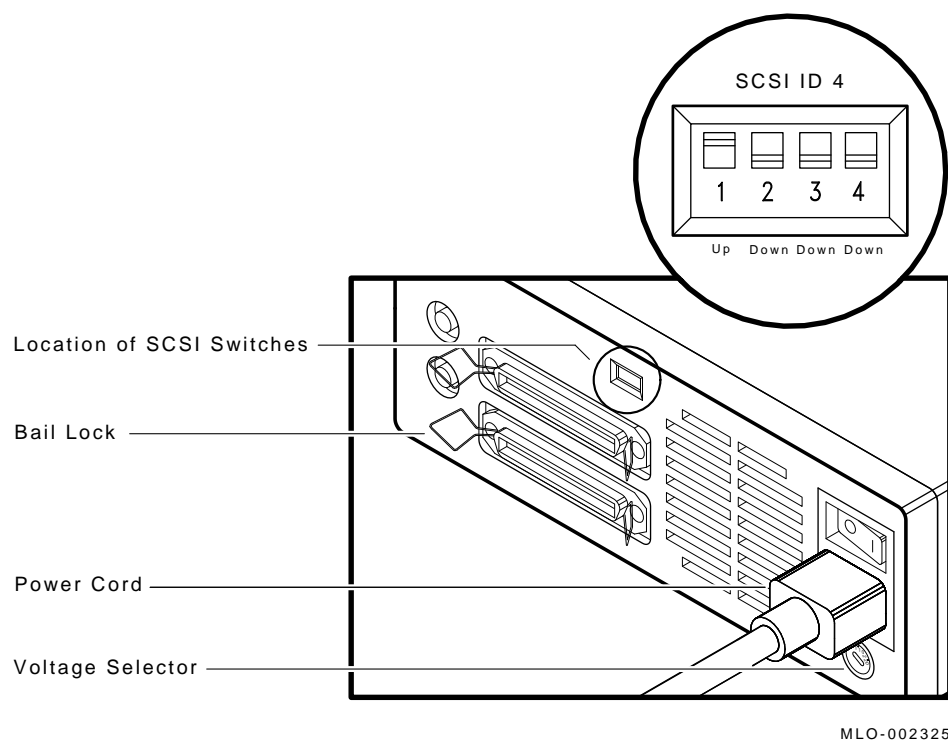


Figure CD-1 RRD40 Expansion Box SCSI Address ID Setting

4. Power down the system box and any expansion boxes.
5. Connect SCSI expansion cable from the RRD40, (Top connector), to the system box making sure the bail locks have been secured in place. (Refer to Figure CD-1).

6. Install the SCSI terminator to the rear of the RRD40, (bottom connector), making sure the bail locks have been secured in place. (Refer to Figure CD-1).
7. Power up RRD40 expansion box before powering up the system box.
8. Power up the system box.
9. After power up and a successful completion of the self-tests, verify the presence of the RRD40 by entering the "SHOW DEVICE" command at the console prompt (>>>) and noting the RRD40 under the DEVNAM column. Refer to Appendix C for "SHOW DEVICE" command examples.

Power Up Self Tests and Diagnostics

Power up Self Tests and Diagnostics

There are two types of console test commands, diagnostic test commands, and utility commands. Table A-1 contains a complete list of the diagnostic test commands. Table A-2 contains a complete list of the utility commands.

Table A–1 Diagnostic Test Commands

Test	Description
T F	Self-test for future option (No test run)
T E	Self-test on time-of-year clock (CLK)
T D	Self-test on nonvolatile RAM (NVR)
T C	Self-test on serial line controller (DZ)
T B	Self-test on system memory (MEM)
T A	Self-test on memory management unit (MM)
T 9	Self-test on floating point unit (FP)
T 8	Self-test on interval timer (IT)
T 7	Self-test on the SCSI-A bus
T 6	Self-test on the SCSI-B bus
T 5	Self-test on interrupt controller and E-Net ID ROM (SYS)
T 4	Test DSH32-B communications module async line
T 3	Test DSH32-B communications module sync line
T 2	Self-test for future option (No test run)
T 1	Self-test on the Ethernet circuits (NI)
T 0	Customer mode system exerciser
T 101	Field Service mode system exerciser (two passes)
T 102	Field Service mode system exerciser (continuous)
T 80000103	Manufacturing mode system exerciser
T 80000106	Selects individual devices for exerciser mode

Table A-2 Utility Commands

Test	Description
T 50	Configuration display
T 51	Set NVR default boot device
T 52	Set NVR default boot flags
T 53	Set NVR default recovery action flags
T 73	Special key on Compac Tapes
T 74	Special key on diskettes
T 75	SCSI disk data eraser
T 76	SCSI diskette formatter

Hexadecimal Memory Codes

Table B–1 Hexadecimal Memory Codes

Codes	System Memory
00400000	4 megabyte
00800000	8 megabyte
00C00000	12 megabyte
01000000	16 megabyte
01400000	20 megabyte
01800000	24 megabyte
02000000	32 megabyte

NOTE

The first line displayed indicates the total system memory available.

SHOW DEVICE Command

```
>>> SHOW DEVICE

VMS/VMB  ULTRIX  ADDR      DEVTYP  NUMBYTES  RM/FX  WP  DEVNAM
-----  -
ESA0      SE0     08-00-2B-03-79-1F

DKA300    RZ3      A/3/0/00  DISK    104   MB  FX           RZ23
DKA400    RZ4      A/4/0/00  DISK    209   MB  FX           RZ24
MKA500    TZ5      A/5/0/00  TAPE    ..... RM
...HostID... A/6      INITR

DKB300    RZ11     B/3/0/00  DISK    104   MB  FX           RZ23
DKB400    RZ12     B/4/0/00  RODISK  205   MB  RM           WP  RRD40
DKB700    RZ15     B/7/0/00  DISK    1.0   GB  FX           RZ57
...HostID... B/6      INITR
```

Figure C–1 Example of the SHOW DEVICE Command

```
>>> SHOW DEVICE

VMS/VMB  ULTRIX  ADDR      DEVTYP  NUMBYTES  RM/FX  WP  DEVNAM
-----  -
ESA0      SE0     08-00-2B-03-79-1F

DKA300    RZ3      A/3/0/00  DISK    104   MB  FX           RZ23
DKA400    RZ4      A/4/0/00  DISK    209   MB  FX           RZ24
MKA500    TZ5      A/5/0/00  TAPE    ..... RM
...HostID... A/6      INITR

DKB300    RZ11     B/3/0/00  DISK    104   MB  FX           RZ23
DKB400    RZ12     B/4/0/00  DISK    332   MB  FX           RZ55
DKB500    RZ13     B/5/0/00  DISK    664   MB  FX           RZ56
...HostID... B/6      INITR
```

Figure C–2 Example of the SHOW DEVICE Command

```

>>> SHOW DEVICE

VMS/VMB  ULTRIX  ADDR      DEVTYP  NUMBYTES  RM/FX  WP  DEVNAM
-----  -
ESA0      SE0     08-00-2B-03-79-1F

DKA300    RZ3     A/3/0/00  DISK    104   MB  FX           RZ23
DKA400    RZ4     A/4/0/00  DISK    209   MB  FX           RZ24
DKA500    RZ5     A/5/0/00  DISK    .....  RM      WP  RX23
...HostID... A/6      INTR

...HostID... B/6      INTR

```

Figure C-3 Example of the SHOW DEVICE Command